ABSTRACT OF AN

Address

ON

THE MEDICAL PROFESSION AND THE STATE: THEIR RELATIONSHIP, ESPECIALLY WITH REGARD TO VACCINAL LEGISLATION.

Delivered by

JOHN C. McVAIL, M.D., D.P.H. CAMB., F.R.S EDIN.,

PRESIDENT OF THE CONFERENCE OF MEDICAL OFFICERS OF HEALTH HELD IN BIRMINGHAM ON WEDNESDAY, SEPT. 28TH, IN CONNEXION WITH THE ANNUAL CONGRESS OF THE SANITARY INSTITUTE.

GENTLEMEN,—In such a meeting as this the subject can perhaps be best approached by referring to the relationship of medical officers of health to their local authorities. As is so well urged by Dr. Alfred Ashby in his article in Stevenson and Murphy's Hygiene, the medical officer must be prepared from time to time to submit with equanimity to the rejection of any advice which he may tender to his local authority, however sound such advice may have been; nor must he be too sensitive in the event of his advice or actions being misunderstood or misconstrued. He must bear in mind that the decision of his local authority may have been subject to considerations which had no weight with him. It is, however, his duty, if he finds that his advice is systematically and persistently ignored and that the health of his district is likely to suffer, to repeat such advice, again and again if need be, firmly but dispassionately. He should further endeavour to look at all questions, not merely from the view point of the specialist in public health, but also from that of the local authority and of the owners and occupiers of premises and of the public. Of course, the medical profession is not related to the State so closely or directly as is the health officer to his local authority. The profession is not paid out of public funds in the same way as the public health service is. But only persons legally qualified in medicine can perform the many functions which bring us as a profession into very close relationship with the State and which give us in great measure the position of advisers regarding the means to be used by the State for the prevention of disease and the improvement of the physical well-being of the people. This is a position, indeed, which the profession has not hesitated in many circumstances to assume as its own. A clear distinction should, of course, be made between this professional position and our individual position as units in the general community; but if there is anything in the analogy which I have ventured to draw, then it is our professional duty to declare with no uncertain voice, and to repeat as often and as urgently as may be necessary according to the greatness of the emergency, our deliberate judgment on methods of disease prevention and health conservation. But it would be a mistake to assume that our conclusions, though their truth be demonstrated and be freely acknowledged by the legislature, will necessarily be embodied in Acts of Parliament and, in their practical application, be enforced by pains and penalties.

Let us apply these considerations to the question of vaccination. Speaking to an audience of health officers—speaking especially after some 1100 of us have testified by signed declaration that vaccination and revaccination prevent and control small-pox and that small-pox cannot be effectually prevented and controlled without these means—I need not spend time in urging the value of the Jennerian prophylaxis. But for the present purpose I shall assume further that the legislature is equally convinced (1) that small-pox is a disease which ought to be prevented; (2) that it can be safely prevented by vaccination and revaccination; and (3) that it cannot be prevented by any other known means. Does it then unavoidably follow that vaccination should be compulsorily enforced? Can nothing be conceived capable of justifying Parliament in refraining from enacting a power of absolute coercion? Small-pox is an evil—a very terrible evil—but there are other evils besides small-pox, and it is sometimes necessary in mundane affairs to make a choice of evils. Let us suppose that Parliament is, rightly or wrongly, of opinion that in many places in England the opposition to vaccination is so deep-seated that its attempted enforcement could be carried out only with the aid of an army of soldiers or would involve the wholesale imprisonment of large communities. Surely, in such circumstances Parliament is right in endeavouring to weigh and measure the two evils and to choose the less. It may make a wrong choice and the country may have to pay for the error, but the medical profession has no need to feel injured or aggrieved. The crucial fact is that the decision of such matters is a function of the legislature and of the legislature only, and where the duty is there the responsibility must rest. The words "expediency" and "opportunism" are not popular. They are apt to suggest the attitude of Bunyan's Mr. Facing-both-ways. But opportunism may after all be the truest Statesmanship, and the man who supports a temporary relaxation of a compulsory law may be the best friend of the administration of that law. In Scotland we are, so far, in the happy position of not requiring this measure of expediency. The vaccination default, instead of being over 30 per cent. as in England, is less than 3 per cent.

Let it be understood that in all this I am not discussing in concrete fashion the merits or demerits of the new Vaccination Act, nor is it my purpose to do so here. In this meeting we are probably all heartily agreed that revaccination as well as primary vaccination requires legal provision; that sanitary authorities instead of poor-law authorities should have charge of vaccinal administration; that all required vaccination prosecutions should be conducted not by local authorities but by public prosecutors; that vaccination certificates of private medical men should be paid for by the State as are similar certificates by public vaccinators; and that all vaccination certificates should place on record the area and number of marks. These points and others, however, have been discussed very fully in the medical press and elsewhere and they need not detain us, especially as there is good reason to hope that next session of Parliament will see the introduction of a Revaccination Bill. Regarding the conscience clause we may as a profession be satisfied that our withers are unwrung. In this country vaccination though called compulsory has never been compulsory. The whole question is between one degree of pressure and another. The greatest pressure has been by repeated penalties. Imprisonment for non-vaccination has never taken place. It is the common law of the land that in the last resort people who refuse to pay legally inflicted fines may be imprisoned, but that applies to fines for infringement of the Vaccination Acts in the same way as to fines for the infringement of other Acts. Therefore, I say, repeated fines have been the maximum legal pressure ever brought to bear in favour of vaccination. Limitation in the number of money penalties means simply a less degree of pressure. The recognition of what is technically called conscientious objection is assumed by most people to be a further step in the same direction. Whether it will really turn out to be so time alone can tell. Under the old system vaccination had within recent years come to be a matter of local option, and in many places where the option went against vaccination no pressure of any kind was brought to bear upon individuals. But under the new law Mr. Chaplin has indicated that where boards of guardians fail the Local Government Board will see that the subject is definitely brought before parents and that if the visit to the petty sessions is not made within the stipulated time the law and the penalties attached thereto will be enforced. In fact, individual option will take the place of local option, and it would be rash to prophesy that under the new system the vaccination default will be greater than, or as great as, under the old. If all legal or artificial pressure were abolished there would come into force increasingly the strongest natural pressure—that of small-pox itself. It was the world's intimate knowledge of the dreadful power of variola and its quickly gained experience of the counteracting power of vaccinia that brought about the wide triumph of the preventive in the early part of this century. It may seem paradoxical, but there is a sense in which it is correct to say that the growing neglect of vaccination is the greatest centenary tribute to the memory of Edward Jenner. A century ago everybody knew and dreaded small-pox. Nowadays not one man in a hundred has ever

seen the disease and the public acquaintance with history is not so intimate or its imagination so realistic as to provide a motive equal to that which was furnished to our forefathers by everyday experience of the pestilence.

Democracy and autocracy have each their advantages as a form of government, and democracy in some countries adopts methods which even an autocrat might be tempted to envy. A free reading of Dr. Rauch's evidence before the Royal Commission may be given in illustration. Dr. Rauch was executive officer of the Illinois Board of Health. In his country there is no law of compulsory vaccination. Everybody is at liberty to remain unvaccinated if he pleases. In 1882 there was great risk of introduction of small-pox into the State of Illinois by immigrants. A meeting of the authorities of the different States was called and the National Board of Health was asked to require the vaccination of all immigrants. Pressure was brought to bear on the steamship companies and on the health officers at the ports. Very much was done in this way, and it was supplemented by the examination of all immigrants in course of transit by railway. Certificates were required of vaccination on board ship, and the arms of those thus certified were examined on board the trains during the railway journey. If the result was unsatisfactory the operation was again performed. In these ways many thousands were vaccinated. One day three Englishmen objected. Dr. Rauch was on the train. He explained to them that he wanted them vaccinated. They asked if vaccination was compulsory. "By no means," he said; "this is a free country." "Then we won't be vaccinated." "All right," he replied; "when we get to the border of our State I'll let you off the train." "But we don't want to get off." "Just so; but we won't have you in our State. We are a free people and will exercise our freedom in keeping you out." Then the three Englishmen got vaccinated—voluntarily, of course. In the same way the executive of a free people issued an order for the vaccination of all the children both in public and private schools. All the railway employés throughout the State were vaccinated or revaccinated and also the employés of all the manufacturing and mercantile establishments. In one mining town there was much small-pox and Dr. Rauch determined on general vaccination and revaccination. Here are question and answer as given before the Commission. Dr. Rauch says:—

"I issued an order to that effect, and it was enforced in an indirect way. Those who were vaccinated and revaccinated were permitted to leave their houses, but those who would not be vaccinated or revaccinated were compelled to remain inside of their houses. This is the way that I have acted in a number of instances and the result has been that of immediately stopping the epidemic." (Q.) "There is no law, is there, to compel an unvaccinated person to remain in his house? (A.) No; but that comes within the police jurisdiction of the State." (Q.) "You mean that it was absolutely compulsory that they should stay in the house unless they were vaccinated? (A.) Yes; that position has been maintained by the courts. If the local health authorities think it is necessary that persons should remain in their houses so as not to endanger the lives of others, they compel them to remain." (Q.) "And that applied to all the persons in a house where a case of small-pox had occurred? (A.) Yes; the result is simply this, that a person would rather be vaccinated than be compelled to remain in the house." (Q.) "Practically speaking, it operates as a compulsion sufficient to lead to the people being vaccinated? (A.) Yes."

Such are the proceedings of a great democracy. In Germany, where methods much more autocratic than ours are acknowledged to exist, there is an enormous saving of life and health by means of the stringent law of vaccination and revaccination which is in operation there. It is impossible, and would be unprofitable if it it were not impossible, to enter here on the never-ending question of where personal liberty ends and where the rights of society begin, or the similar question as to the relative responsibility of the parent and the State for the protection of the infantile community against disease. In this country a vaccination law such as that of Germany seems in the present state of public opinion impossible. The public have to be educated and they must pay for their education. In so far as they will accept no other schoolmaster than small-pox their education will be all the more costly, but the lesson, once learned, will be all the more thorough. The pity of it is that this schoolmaster accompanies his teaching by punishment and that the punishment so largely falls on helpless children. But it has always been the case, in matters physical, intellectual, and moral, that the sins of the fathers are visited on the children. It is our duty to make the visitation as light as possible, and mention of that duty brings me to the consideration of the relation of the medical profession to the prevention of small-pox in presence of the new law of vaccination. Shall we continue to do our utmost for the protection of the population against itself, or shall we stand aside and sulk because so-called compulsion has been temporarily abolished? Surely the question contains its own answer. It is mere truism to say that as medical practitioners we are bound to do our best for every patient, no matter how refractory and ungrateful he may be; that as health officers we are bound to do our best for the protection of the districts which have been committed to our charge, no matter what may be the attitude of the people or of the local authority; and that as a profession we are bound to persevere in our efforts to shield the nation from pestilence. The principles which underlie the oath of Hippocrates leave us no choice. If our patient be a man condemned to the scaffold we must try to cure him of the disease which threatens to rob justice of its victim; though we have reason to believe that the death of an individual would be a public boon we must endeavour to preserve his unworthy and mischievous life; and surely it is no less our duty to try to protect innocent children from the results of parental error and folly. The State, and not the profession, is responsible for the law, but we must continue to advise the State aright, and whatever be the law, even if there be no law, we must advise the individual aright.

Coming to closer quarters with this aspect of the subject let me refer briefly to certain specific points:—1. In the past a very large number of people though not doubting the efficacy of revaccination have yet contented themselves with a single operation. It is obvious that the risk of trusting to this—without renewal of the premium, as Dr. Bond would say—is all the greater according as the possibilities of infection increase. Now more than ever is it therefore the duty of medical men to advise revaccination as a supplement to primary vaccination. It should be pointed out to the individual that, independently of any law, he can practically defy small-pox so far as he is personally concerned and that under the new conditions there is all the greater need for his maintaining at its highest standard the protection which vaccination is capable of affording. To the guardians of adolescents this fact should be strongly brought home. 2. From this time forward every vaccination should be done as efficiently as possible. No medical man should ever again yield to a parental request to make only one small mark on a child's arm. Let the standard number of typical Jennerian vesicles be produced or let the parent go to the petty sessions and there obtain the relief which the new law allows. There can be no hardship in offering this choice and an incidental result of such a course will be to draw more and more clearly the already very clear contrast between the vaccinated and the unvaccinated in epidemics of small-pox. 3. I come last of all to the consideration of isolation as a means of the prevention of small-pox. A century ago Haygarth held that the atmospheric carrying power of variola did not exceed 18 in. and that isolation could quite well be accomplished and maintained within an ordinary dwelling house. For us isolation means the provision of hospitals, themselves properly isolated. In regard to this matter of hospitals it seems to me that we are in a curiously anomalous position. If vaccination and revaccination were universal we could practically do without small-pox hospitals, and it is a singular fact that one of the effects of national neglect of vaccination is that we have particularly to discuss hospital isolation regarding that particular zymotic disease for which hospitals would be essentially unnecessary, if only we would take full advantage of that preventive measure which is open to us in the case of small-pox as it is in no other malady.

But we must consider the question on practical lines and accept the fact that sanitary authorities cannot in the present condition of this country rely on vaccination and revaccination being so universal as to render small-pox hospitals unnecessary. That is a fact which the ratepayer must also accept. At the other extreme from a condition of universal vaccination and revaccination there would be an entire absence of vaccination and revacination. What part would hospitals play then? I am afraid that, at least as regards epidemic small-pox as distinguished from sporadic small-pox, they would be practically useless. Knowing what we do of the infective power of the epidemic disease it seems only too certain that any possible hospital accommodation would be utterly inadequate and that the infection would overleap all artificial bounds. Whether

at the close of an epidemic we would be in the position of the town of Chester in the last century is a question which at present is fortunately of only academic interest. But in that town, which, according to Haygarth, was a place of "almost incredible" healthiness, only some 7 per cent. of the population had never had small-pox. In the little village of Ware, under similar circumstances, Mr. Anthony Fage divided the population into three classes at the end of an epidemic in the year 1722. The total population was 2515. These he classifies thus: (*a*) those who "had the small-pox before," of whom there were 1601; (*b*) those who "had the small-pox this time," who numbered 612; while (*c*) the remaining 302 he describes under the suggestive heading, "to have the small-pox." For myself I would be inclined to hope that in spite of the high convectivity and infectivity of small-pox, and in spite of the doubts which have been cast on the value of hospital isolation in preventing the prevalence of so mild a disease as scarlet fever, which has no preventive means analogous to vaccination, yet the differences in the conditions of life between this century and the last would, even in the absence of vaccination, perhaps tend to prevent such experiences as those of Chester and Ware. But we cannot tell and we must fervently hope that we shall never have the opportunity of learning.

My point here is that if vaccination and revaccination were universal small-pox hospitals would be almost or altogether needless, and if vaccination and revaccination were entirely wanting such hospitals would be almost useless, at least against the epidemic disease. The nearer we approach to this last state the larger are our hospitals likely to grow and the more hopeless will it be to rely on them. In the intermediate condition—the condition in which we live—with vaccination and revaccination partly prevalent, hospital isolation is a measure of very great value and must be a routine part of the procedure with regard alike to the sporadic and the epidemic disease. Experience indicates that the administrative part of a small-pox hospital should be large and well-equipped and that around it there should be space for rapid extension of whatever ward accommodation is permanently provided. Needless to say, the word isolation means more than the removal of the patient. It means isolation of the poison by disinfection, or still better by destruction, of infected articles; it means not merely the removal of the patient but his very early removal, and this involves search for persons who have been exposed to infection, and constant watching of such persons during the possible incubation of the disease. All this belongs to the A.B.C. of preventive medicine and must be rigidly attended to. Yet it has to be admitted that though very valuable isolation with its concomitants is essentially a precarious protection. Even if we had a law making isolation more strongly compulsory than vaccination has ever been in this country, and even if there were to be no extension of that destruction of small-pox hospitals by infuriated mobs, of which there were two instances not very long ago in the West of England, yet isolation might fail at any moment. Under such a prophylaxis the individual has to depend not on himself but on other people. As I have said elsewhere his *cordon* of protection is a chain the measure of whose strength is its weakest link, and over not one link has he any sufficient control. Failure of parents to observe the symptoms of illness, failure to call in a medical man, failure of the medical man to diagnose small-pox, failure in promptitude of removal, inadequacy of hospital accommodation, insufficiency of disinfection of persons and things,—these are among the risks to which even a law of compulsory isolation would leave a man exposed. On the other hand, by means of vaccination and revaccination the individual himself is protected. He carries his protection with him wherever he goes and the father has control over the protection of himself and his children. All this, however, furnishes no excuse for refraining from utilising to the very utmost every measure supplementary and complementary to vaccination, no matter how uncertain such measures may be.

Finally, we must endeavour by every means in our power to educate the public, who choose our law-makers, in the very truth about vaccination. It is nearly twelve years since I first pleaded with the profession to undertake this education. The Jenner Society has within the last two or three years done yeoman service here, and more recently the British Medical Association has heartily aided in the work. May I suggest in conclusion that the Sanitary Institute might also now lend a hand?

Remarks
ON
MEDICAL PROGRESS.[1]

Being the Abstract of an Address delivered

BY L. A. WEATHERLY, M.D. ABERD.

GENTLEMEN,—"The *old* are ever learning much from the *new*; may not the *new* learn something from the *old*?" Some of you, possibly, imbued with the pessimism of Max Nordau, may shrug your shoulders at the very thought of the old being capable of either learning, appreciating, or acting upon any new ideas. You may agree with him that you cannot expect novel form of efforts from those stiff old organisms; that you cannot compel their trains of thought to leave the smooth and easy tracks and go bumping along over new and unbroken ground; that the old intellect has first to comprehend the new thought and secondly to conquer the tendency to formulate the idea in question in his old accustomed way; that it is to the minds of the old too much trouble to escape from the habits into which they have fallen and that even if they took this trouble that their central nervous system would be incapable of generating impulses of sufficient energy to enter untried paths. Yes, and to a certain extent you would have reason on your side for such mental argument. But surely the majority of you will believe with me that with the great and wonderful advance of science this class of "automaton" in medicine and surgery is the exception rather than the rule and that however old a medical man in active practice may be he is always willing to be enrolled among the learners and to glean new ideas and apply new methods of treatment for the benefit of his patients, though perhaps he may not be quite so enthusiastically confident as the young practitioner with regard to results.

On the other hand, some of the older school may ridicule the probability of the young men dreaming of learning anything from them and declare that they are far too satisfied with the rapid advance of science in their time to imagine for a moment that any of those who lived in the days before chloroform, antiseptic surgery, the use of the thermometer, the stethoscope, the ophthalmoscope, laryngoscope or the microscope could teach them anything which would in any way help them to do greater good to the patients entrusted to their care. Let us hope that such a young practitioner may be the exception rather than the rule and that if such a one exist he will exercise the intellect God has given him to reason out the evolution of science, and thus recognise that the grand wall of that science upon which to-day he stands had its foundations laid generations ago and that from anyone who has had anything to do with the setting of any one single stone of that structure something may always be learned.

As Kidd, in that most able work of his, "Social Evolution," so clearly points out: "The marvellous accomplishments of modern civilisation do not necessarily imply any extraordinary intellectual development in ourselves at all. They are not the colossal products of individual minds, but rather the results of small accumulations of knowledge, slowly and painfully made and added to by many minds through an indefinite number of generations in the past. In the fulness of time, when the ground has been slowly and laboriously prepared for it by a vast army of workers, the great idea fructifies and the discovery is made." And as Bellamy so well put it, "All that man produces to-day more than did his cave-dwelling ancestors he produces by virtue of the accumulated achievements, inventions, and improvements of the intervening generations." We are now rapidly approaching the close of a century which has seen a far greater advance in scientific evolution than any other in the world's history. In this marvellous advance medicine and surgery have shared and the Victorian era will ever be a striking landmark in the history of our profession and ever be remembered as a period in which science established her

[1] Presidential Address to the Bath and Bristol Branch of the British Medical Association, delivered on June 29th, 1898.

dominion and lent her powerful aid to the cause of humanity. The older writers on medicine, when physiology was yet in its infancy and thus an exact scientific knowledge of disease unattainable, sounded a warning note lest too much should be made of the principles of medicine to the detriment of its practice; and Sir Thomas Watson in his memorable lectures, from which the most scientific student of to-day may learn much, harped on the same string. If this were necessary in those days, how much more is such a danger signal of use in our own? Our present system of medical education is to my mind erring greatly on the side of devoting too much time to the science of our profession and too little to its art. At the recent Montreal meeting of the British Medical Association Mr. Christopher Heath spoke with no uncertain voice as to the tendency of modern surgical education, declaring that the teaching of the students was getting too much into the hands of professors who were anatomists but not surgeons, and that the practical surgeon has in the present day too little time with his pupils. It takes often three years for the student to get through his primary examination, leaving only two for the study of medicine and surgery; and he declares that the growing tendency of the non-medical teachers of collateral science to regard their particular subject as the one most essential for the medical student must be restrained and the preliminary period of medical study must be cleared of many obstructions if the student is to have the necessary time to devote to the thorough study of those strictly medical subjects which will fit him to be a sound practical physician or surgeon. Weighty words these and who can deny their truth?

There might have been a tendency in the old system of medical teaching to make the student too much a disciple of empiricism and to inculcate in him too great a reliance in what one might aptly call common sense; but could not the scientific book-reading student of to-day benefit much by a little smattering of rational empiricism and the education of common-sense reasoning? Clifford Allbutt recently said: "We must not allow ourselves to be blinded by the light of brilliant generalisation of the laboratory and the lecture room, helpful as such light may be to the value of these empirical rules which have been painfully gathered together in the trials and the errors of generations of men. At the same time it behoves us to continually submit our empirical laws to revision, bearing in mind always that empiricism is, after all, science without roots." Looking back to my student days I remember with true appreciation the value of my apprenticeship to my father. It was hard work to steal a few hours from the day, with the morning lectures and the work at the infirmary, to run off to Portishead to make up bottles of medicines, mix pills and fold powders; to listen to the talk of old women, with their "windy spasms"; to sympathise with old men, with their "coughing and a spitting"; to hear young anæmic girls describing what they called "populations of the heart and digestion of the stomach"; and to visit with my good old father some of his most anxious cases and hear from him an elucidation of the symptoms, the probable outcome of the disease, and the various reasons for his treatment; to watch how acute was his observation and to note how often before he had asked a single question he had come to a more or less definite opinion as to how his patient was. Irksome though I often thought those hurried journeys were, how frequently since that time have I realised the true value of the practical teachings I thus obtained? Yes, indeed, "science," as Oliver Wendell Holmes says, "is a first-rate piece of furniture for a man's upper chamber, if he has common sense on the ground floor; but if a man has not got plenty of good common sense the more science he has the worse for his patients."

The older practitioner sees day by day the instruments of precision growing more numerous, more exact, and more trustworthy. He realises that the themometer rationally used can tell him what his hand could not; he knows the value of the stethoscope and is fully aware of the possibility of more accurate diagnosis by the aid of the ophthalmoscope or the laryngoscope; he contemplates with befitting awe and wonderment the revelations made by the microscope; he bows with admiration before the successful workers in the science of bacteriology, and he pictures the possibilities which have been opened up by the knowledge of the relation of living germs to diseased processes and which at present cannot be calculated; he knows that while this new science is gathering round itself its sister sciences that it is already attacking the very strongholds of dire disease and he wonders how he in the days gone by could have been able to diagnose the cases he believes he did correctly appreciate or pull his patients through their many grievous bodily ailments successfully. Yet, while envying his younger brethren, while listening to their scientific papers and their minute diagnoses of obscure diseases, does he not feel that perhaps it would be well for them could they have some of the difficulties to encounter which fell to his lot before science had so asserted her sway? The Italian painters say, "The eye can only see what it has learned to see." May not we say the same of all the senses? And had not the older men of our profession to depend almost entirely upon their organs of sense, not having our present grand array of diagnostic instrumental armamentaria? And how much can the eye see if properly trained? As Dr. Fothergill wrote: "The youthful gaze may see nothing, though the eye is young and the vision keen, where to the duller eye of advanced life the face may be a written page whose characters are both familiar and distinct." What the trained medical eye can see forms the great portion of that individual experience so valuable and yet so absolutely untransferable.

Professor Laycock always insisted on what he termed carefully cultivated physiognomical diagnosis and there can be no doubt that our older medical brethren were obliged to cultivate this to a very great extent. Might not the younger members of the profession with advantage do the same? By it important hints are given for physical investigation and from it are often furnished most valuable suggestions as to treatment to be adopted. To use the words of the Professor: "Study well the physiognomy of disease—that is to say, all those characteristics in the patient that reach the unaided senses and which are associated with morbid states; whether they be sounds or odours, or visible and tangible modifications of form, complexion, expression, and modes of functional activity; taking cognisance of *minute* modifications as well as of the more obvious, for they are only minute in a popular sense. Technically a shade of tint of the skin; a quickly passing change in the expression, an almost imperceptible modification in the breathing or mode of speaking; the ring of a cough; a local, and in itself trivial, development of a capillary network; a slight twitching of a muscle, or a tremor, may be as clearly significant of structural disease as the most characteristic and undoubted physical sign." The love of scientific detail and ascertained facts often causes the highly educated medical man of to-day to lose sight of the more general characters of constitutional disturbance and consequently handicaps him most seriously both in the prognosis and the treatment of his patient's case. Professor Erichsen not so long ago maintained that at the present time we are apt to pay too strict attention to physical diagnosis, and by so doing the educated student of to-day is making himself actually less useful to the sick man than his less perfectly trained predecessor, who by reason of his more general observation was often a superior antagonist to disease.

I well remember my first case of pneumonia when I started practice and how I hurried home to tell my father with a certain amount of pride what I considered a more or less definite piece of physical diagnosis. My father paid little attention to my recounting the extent of dulness and the characters of the respiratory sounds and more or less abruptly broke in with the simple question, "What are his general symptoms?" and then started a cross-examination as to his general expression, colour of skin, clearness of mind, amount of sleep and length of uninterrupted sleep, how he had taken his nourishment, the amount of urine he had passed and its condition, and on hearing my answers gave me a prognosis diametrically opposite to the one which my physical diagnosis had led me to believe. And he was right. He taught me a lesson which has stood me in good stead.

The druggists of our time have done much for us by their elegant pharmacy to make the administration of drugs far more pleasant for our patients; they are for ever introducing to our notice new remedies, novel preparations of old medicine; they are putting their pills and their tabloids into neatly labelled bottles with the dose to be given and the complaints to be cured by them writ large; they are sending out pamphlets broadcast, with description of diseases which can be quickly defeated by this or that new drug, with some grand sounding Latin or Greek name; and the medical practitioner is getting constant gifts of useful diaries with long lists of therapeutic agents as manufactured by this firm or that, and maybe he is inveighed into carrying about in his

waistcoat pocket a leather case of little flasks containing different coloured pilules, which he is able to prescribe instanter as occasion arises, yellow for the liver, green for the chest, blue for the stomach, and pink—well, we know by our daily paper what they are for. Is this all an unmixed blessing? I do not deny that in many instances the modern tendency of pocket prescribing may be useful, but is it not too much putting our patients into the hands of the advertising druggist? and is it not getting us out of that art of prescribing, an art which can only be learnt by practical experience in the surgery of the general practitioner or behind the dispensing counter?

And with all these new drugs which are constantly being brought to our notice, are we not perhaps losing sight of the wonderful results the practitioner of bygone days had with some of the old-fashioned medicines simply because perhaps we are not yet able to explain their action and therefore think that they should be rejected? The alteratives which the older practitioner found so useful and prescribed with such good results are, in my opinion, too much neglected in the present day. That grand old drug, calomel, has been allowed by the younger generation to take too much of a back seat in favour of more fashionable remedies. My father never went his rounds without having in his pocket a little box of pilula hydrargyri subchloridi, gr. iii., and many an illness was cut short or limited by the early administration of what I remember some of his club patients called "the old doctor's little scavengers."

Could we wake from his everlasting sleep in this world a surgeon of sixty years ago and place him in one of our modern operating theatres how he would rub his eyes to stare with utter amazement at the daring deeds of the modern surgeon. He would see the patient brought in already unconscious of what was about to be done; he would note the scrupulous cleanliness which antiseptic surgery has taught us in all the surroundings of the room, the appliances of the operating surgeon and his assistant; he would, perhaps, see the abdomen opened and its contents handled with the most perfect confidence; and this or that operation, never dreamt of in his day as being even possible without instant death, brought to a successful termination. And wonderment would be justifiable. Can we to-day believe, as Dr. Playfair recently reminded us, that it was only a comparatively short time ago that the benches of the Royal Medical and Chirurgical Society rang with excited cries of "Down with the belly-rippers!" when Spencer Wells had the temerity to bring before it a paper advocating ovariotomy. All honour, then, to the discoverer of anæsthetics and the pioneer of aseptic surgery. By their work what has humanity gained? Surely, if a successful general had with his army killed as many lives as these men have saved from the grim hand of death a grateful country would have showered upon him honours galore and wealth beyond the dreams of avarice.

And yet with all the marvellous results of modern surgery, with all the quiet confidence with which the operator of to-day takes his knife in hand, with all the truism that anatomically there is nothing impossible to the surgeon and that physiology alone steps in and cries, "Halt, enough," may not the young surgeon learn something from his older brethren? Is he not perhaps a little too much given to elaboration and detail in his operations, making them too long and increasing the chance of shock, and might he not with advantage educate himself in that celerity and dexterity which was absolutely essential to the surgeon who had to deal with his hapless patients before the blessings of anæsthetics had started a new era in this branch of our profession? Is not the young surgeon perhaps a little too prone to use his knife as a means of diagnosis without giving his powers of observation a chance of arriving at a right conclusion, and may not the conservatism of his older brethren be a useful check in some cases to his ardent desire to do what he may think is the only thing for his patient?

Only a few weeks ago Mr. F. Treves read a paper before the Medical Society of London on abdominal section as a remedial measure and in conclusion spoke of the exploratory incision as follows: "That this simple procedure has been of enormous value no one will doubt. That it has been the means of saving many a life has been amply demonstrated. That it has enabled a correct diagnosis to be made and a logical treatment to be carried out in hundreds of obscure cases needs not to be insisted on; but there must arise in the minds of many the question whether the exploratory incision, infinite as its value may be, is an entirely unmixed blessing. I notice that there are indications which tend to allow this ready measure to replace the admirable labour of clinical observation. The incision is so simple, the collecting and arranging and judging of clinical evidence is so difficult and tedious. With a scalpel in the hand the patient, searching examination of the abdomen as practised in the old days is no longer needed and it is a question whether the education of those who wish to become acute clinical observers has not suffered a little thereby." The caustic stick and speculum era will long be laughed at by the younger generation who know now how little of the "ulcer of the cervix" there existed, and the age of "flexions" and the innumerable kinds of pessaries which the practitioner of the fifties, sixties, and seventies carried about with him has more or less passed away. Yet these instruments if properly applied may give comfort to many women and possibly the surgeon of to-day is a little too prone to use his knife and his needle when in many cases he might by the proper application of a suitable pessary do more for his patient. Wholesale acceptation of practice which has been proved to be in many cases opposed to scientific teaching becomes bigotry of the worst order, but may not wholesale condemnation be equally savouring of that fault? We are, I am afraid, while preventing the pendulum swinging too far in one direction, often allowing it too much play in the other.

In the successful practice of midwifery asepticism is playing an important part and the death-rate of women in childbirth when attended by duly qualified practitioners is gradually but surely lessening. We realise now how absolutely necessary is the most perfect cleanliness and we practice it with grand results, and yet in these days of hurry and scurry, of restless desire to do everything in record time, is not the word of warning spoken by Dr. Sinclair to the young practitioner in midwifery a useful one? With the use of anæsthetics, with the knowledge that slight injuries can now be so quickly and surely treated with hope of rapid recovery, is he not too prone to rush to his long forceps for assistance? No doubt, with time precious, with the anxious father longing for the news of his wife's safety and the advent of his first-born, the young medical man is often tempted to assist nature when nature is really crying out for patience and for time. With shirt sleeves turned up, with long forceps in hand, it may be a satisfaction to him to whisper through the keyhole to the impatient and anxious father the news that the trouble will soon be over, but it may not be quite so gratifying if some moments later he has, while congratulating the parent on the arrival of a bouncing "he" or "she," to commiserate with him on the possession of a wife with a ruptured perineum. Patience is what the older practitioners have had to exercise and it is patience that the young medico should try his utmost to inculcate.

These, then, are a few thoughts hastily, and I fear very clumsily, thrown together; and if I have made too many quotations, if I have mentioned too many names of men whose worth and work are known to you, I have done so simply to prove that these thoughts have some substance in fact and do not result from any egoism, but owe rather their creation to the practical school in which, however imperfectly, I tried my best to learn my profession. Much more might be said of the useful lessons to be learned by all from the study of the practices of the past. It is a subject to my mind replete with interest and one which would serve admirably for debate. I only wish it could have to-day been dealt with by one more capable than myself. Dear old "Johnnie Toole" once lunched with the late Lord Tennyson and the late Mr. Gladstone and he told a friend that the conversation of those great men had been of such a highly intellectual order that when he left the house he had to catch hold of the first policeman he met and have a chat in order to bring his mind down to the level of everyday life. I fear to-day the converse will happen and that you are already longing for the close of this trivial address in order that you may link your arm in that of some scientific brother and get quickly rid of the taste of my common-place maxims. And yet I venture to think that if what I have feebly brought before your notice is true its common-place hall-mark need not detract from its utility. To those who have long since believed in these maxims no apology is needed, whilst to any who may be too self-satisfied, too cocksure with their scientific teaching and knowledge of to-day, it may start in their highly intellectual and deep-thinking minds the

possibility that, after all, in these days of rapid evolution it does not do to cast aside as worthless the lessons taught us in medicine and surgery by our fathers and forefathers, who worked honestly and bravely in the study and practice of our grand and humane profession.

EPIDEMIC CEREBRO-SPINAL MENINGITIS.[1]

BY A. H. WENTWORTH, M.D.,

ASSISTANT IN DISEASES OF CHILDREN AND IN PATHOLOGY IN THE HARVARD MEDICAL SCHOOL; ASSISTANT PHYSICIAN TO THE CHILDREN'S HOSPITAL, AND SENIOR ASSISTANT PHYSICIAN TO THE INFANTS' HOSPITAL, BOSTON.

(From the Sears' Pathological Laboratory of the Harvard Medical School.)

THE earliest epidemic of cerebro-spinal meningitis which has been reported occurred in Geneva in 1805 and was described by Viesseaux. In 1806 the disease occurred in epidemic form in Massachusetts and was described by a committee appointed for the purpose by the Massachusetts Medical Society in 1809. Since then epidemics have been described in various parts of Europe and America.

With regard to the etiology, in 1887 Weichselbaum described a diplococcus which he obtained at the necropsies of six cases of epidemic cerebro-spinal meningitis. This organism, which very closely resembles the gonococcus morphologically, he found in the protoplasm of the pus corpuscles and to a limited extent free in the inflammatory exudation in the meninges. The chief difference between it and the gonococcus is that it can be grown on ordinary culture media. The best culture medium is Löffler's blood-serum. Weichselbaum called this organism the diplococcus intracellularis meningitidis. During the last three years the diplococcus intracellularis has been found repeatedly by many other observers both in epidemic and sporadic cases of the disease. As a rule inoculation experiments have been unsuccessful. Injections of pure cultures into the pleural and peritoneal cavities of animals have produced sero-fibrinous inflammations and death in some cases. Meningitis has been produced in goats, in a few instances, by injections of cultures of the diplococcus into the spinal canal, and the organism has been recovered from the exudation in the meninges. The organism appears to be very susceptible to outside influences and it is often difficult to obtain more than a few colonies from the exudation in the meninges at the necropsy. Better results are obtained when cultures are made from the spinal fluid obtained during life by means of lumbar puncture. On culture media the organism rapidly loses its power of growth, and to maintain this power it is necessary to make fresh cultures every day. There have been no cases reported of general blood infection by this organism.

As to predisposing causes, there appears to be little or no influence exercised upon the spread of the disease by bad hygienic surroundings. Most epidemics have occurred in the winter and spring and sporadic cases have been observed throughout the year. A very large proportion of all the cases have occurred between the ages of two and thirty years. Both sexes appear to be equally susceptible to the infection.

Most observers are agreed that the disease is but slightly, if at all, contagious. The way in which infection takes place is not known. The organism has been found in the nose in some cases. The period of incubation has not been determined.

With regard to its pathology, the lesions consist of an inflammation of the pia-arachnoid. The exudation is confined in the meshes of the pia; none is found on the surface of the arachnoid. In the most acute cases the exudation is slight in amount and purulent. In acute cases of longer duration there is more fibrin in the exudation. The pus cells are contained in the distended meshes of the pia. Large cells derived from proliferation of the cells of the lymph spaces and from the connective tissue corpuscles appear. These cells are phagocytic and often enclose numbers of the exudation cells within them. In the very chronic cases the membranes are thickened. The exudation is slight in amount and is marked only by circumscribed whitish foci. The cells in these foci are degenerated and do not stain well. The ventricles are always distended. The ependyma is softened and frequently ragged. The fluid is cloudy and a small mass of fibrin or pus is always found in the posterior cornua of the lateral ventricles if the body has lain on the back. The changes in the brain consist of softening and infiltration of the cortex with pus cells, which extend in from the meninges, and of foci of softening in the interior of the brain. There is also some proliferation of the neuroglia cells of the cortex. The exudation extends along the cranial nerves. The nerves most affected are the second, fifth, and eighth pairs. The meninges of the cord are always affected and the exudation is found chiefly in the meninges of the lumbar cord over the posterior surface. The inflammation extends along the spinal nerves to the spinal ganglia. The changes in the interior of the cord are not so marked as in the brain. Degenerations are found in the cranial nerves and in the spinal nerve roots.

(The above description is a brief abstract of the pathological anatomy of the disease as given by Councilman, Mallory, and Wright, "Epidemic Cerebro-Spinal Meningitis," &c. Report of the Massachusetts State Board of Health, 1898.)

In considering epidemic cerebro-spinal meningitis it is very important to remember that the frequent variations which occur in this disease depend not so much upon the presence or absence of certain symptoms as upon differences in their intensity and the period at which they occur. Strümpell has said that perhaps the most striking feature in the disease is the constant variation in the intensity of the nervous phenomena, not only from day to day, but oftentimes in the same day. Certain symptoms which are almost constant in their occurrence are headache, pain in the neck, retraction or rigidity of the head, pain in the spine, and some degree of mental disturbance. Other symptoms which are not so constant but which occur very frequently are vomiting, hyperæsthesia, herpes, changes in the pupils, and conjunctivitis. The moderate and irregular type of fever is very characteristic and forms a striking contrast to the severe nervous symptoms. To obtain a clear impression of the disease it is necessary to consider it in its entirety, the onset, the sequence of symptoms and the variations in their intensity, the peculiar temperature and pulse, and the course of the disease. The picture thus presented is characteristic and in a large number of cases is unlike any other disease. In order to give an adequate and at the same time a clear impression of the variations in the symptoms the latter will be described in detail and the different types of the disease will be briefly alluded to afterward. These types have been classified clinically as foudroyant, acute, intermittent, chronic, mild, and aborted.

With regard to the onset, epidemic cerebro-spinal meningitis almost always begins suddenly. A number of observers have reported cases in which prodromal symptoms occurred and lasted for several days, in some cases for two weeks. These symptoms consisted of malaise, pains in the extremities, and headache. From the character and distribution of the lesions in the meninges, and from the severity and rapidity with which the symptoms develop in most cases, it is not improbable that in some of these cases at least the apparent prodromal symptoms were merely coincidences.

The earliest symptoms are, as a rule, fever and severe headache. In quite a large proportion of cases vomiting is one of the earliest manifestations, especially in children. In a small proportion of the adult cases the disease begins with a chill, which may be repeated. Convulsions are quite uncommon in adults, but in children they are by no means infrequent as one of the initial symptoms. These symptoms will be considered in detail. There is no definite and constant relation between the height of the temperature and the severity of the other symptoms. This is one of the most characteristic peculiarities of the disease. Very often the temperature is moderately elevated at the onset and may remain so for several days or throughout the disease in acute cases. If a four-hour chart is kept remissions will be found to occur, oftentimes of several degrees. Not infrequently the initial fever is very slight, although the nervous symptoms which rapidly supervene may be very severe; these cases usually occur in adults. Quite a number of cases have been reported in which there were severe headache, pain in the neck and

[1] A paper read at the annual meeting of the Massachusetts Medical Society, June 7th, 1898.

spine, and mental disturbance, and the temperature remained normal for several days in the early part of the disease. In children as a rule the temperature at the onset is higher than in adults, not uncommonly 104°F. It shows the same tendency to remit as in adults. It is quite rare to find only a slight elevation of temperature in children in the initial stage. After the first few days there are usually marked irregularities in the height of the temperature from day to day. It is rarely more than moderately elevated later in the disease, and very often the exacerbations and remissions occur independently of the other symptoms. Occasionally the temperature assumes an intermittent character for several days. There may be no parallelism between the fever and the other symptoms at these times. In the chronic form of the disease, after three or four weeks, the temperature is very apt to be normal or subnormal, with now and then slight elevations. The nervous symptoms, however, continue with exacerbations and remissions. Ante-mortem rises in temperature are not uncommon, but many patients die with little or no fever. The above description is by no means a complete one of the many variations which occur in the temperature, but enough has been said to indicate how little relation exists between the fever and the nervous symptoms in many cases.

The disease almost always begins with headache. It is often very severe and persistent and in some cases it is the most marked symptom for several days. It is rarely absent. Vomiting is frequently one of the initial symptoms, although it may not appear for a day or two. It may persist for several days, but usually is of short duration. In chronic cases it is apt to recur at intervals and may become a dangerous symptom. Rigors may be one of the initial symptoms and may occur later with exacerbations of the disease. It is not so constant as the other symptoms and is not common in children. Convulsions are quite uncommon in adults but are by no means infrequent in children at the onset of the disease. The occurrence of convulsions is by no means an index of the severity of the disease. They may occur in some cases which are rapidly fatal, but they also occur in cases in which the disease pursues the usual course. Convulsions are rare late in the disease under any circumstances.

As to the later symptoms retraction of the head and pain and tenderness in the neck are constant and usually appear early. It is somewhat exceptional for them to be delayed for several days. A very marked variation is observed in the intensity of the pain and tenderness, not only in different cases, but in the same case from day to day. There is the same pronounced tendency to exacerbation and remission which takes place in the other nervous symptoms. In many cases these symptoms are but moderately severe at any time; in others they are so severe as to cause opisthotonos for a time. There appears to be no constant relation between the quantity, character, and location of the exudation in the meninges and the degree of pain and retraction. This has been demonstrated at necropsies and I have examined spinal fluid which contained many organisms and in which a purulent sediment formed in the bottom of the test-tube in a number of cases which had but moderate pain or tenderness in the neck and only a mild degree of stupor throughout the disease. In other cases the above symptoms were very much more severe and the fluid was only moderately turbid. In some patients the symptoms of spinal irritation are more pronounced than the cerebral.

Some degree of mental disturbance always occurs in the course of the disease and varies from apathy to unconsciousness. This is one of the early symptoms in most cases and usually occurs within a day or two of the onset, in many cases in the first day. In some of the rapidly fatal cases the patient becomes comatose within a few hours. In some severe acute cases there may be temporary unconsciousness early in the disease and subsequently these patients may show varying degrees of apathy or stupor. Often the degree of mental disturbance is milder and varies from apathy to stupor. Delirium is not uncommon and may assume at times a violent character. As the disease continues marked changes occur in the mental condition at short intervals, frequently in the same day.

Hyperæsthesia is not a constant symptom, but is nevertheless of frequent occurrence. It usually appears at an early stage of the disease and may occur later, when there are exacerbations. It varies from moderate general tenderness to extreme sensitiveness.

Herpes occurs very frequently. The lesions are usually confined to the lips and face. Rarely they have been found on the neck and shoulders. The herpetic efflorescence usually appears between the third and sixth days and is not an index of the severity of the meningitis. Other efflorescences are not so common, although roseola has been observed and petechiæ and ecchymoses occur at times. The latter are oftenest seen in severe cases. It would seem from the literature as if efflorescences occurred more frequently in the earlier epidemics than at the present time. It is not impossible that this may be due to greater accuracy in diagnosis at the present time.

Dilatation of the pupils and incomplete reaction to light occur quite frequently, oftentimes early in the disease. These conditions are not necessarily associated with lesions of the eyes and often show the same tendency to variations as the other nervous symptoms. At times the pupils are unequal. Nystagmus is not an uncommon symptom. Strabismus occurs frequently. It may be either convergent or divergent and appears to have no connexion with the severity of the disease. The condition is almost always a temporary one and both varieties of strabismus may occur in the same patient.

Paralyses are not so common as the other nervous symptoms. They may occur early in the disease and usually affect the extremities and at times the face. Ptosis is seen in some cases. The paralyses are not often complete and are very apt to be temporary, sometimes only lasting for a few days. Patients who have had paralytic symptoms and who recover from the disease rarely show evidences of paralysis at the time when they are discharged from observation. It is uncertain whether paralyses recur later in these individuals. General cerebral and spinal symptoms are much more common than localised ones. The reflexes vary a great deal. The deep reflexes may be increased, absent, or normal. There seems to be no connexion between the reflexes and the severity of the meningitis.

Emaciation is a constant symptom if the disease lasts longer than a week or two. In chronic cases the patients are always extremely emaciated; in some cases they are reduced literally to skin and bones. Constipation is a very common symptom and often requires periodic treatment to relieve it. Retracted abdomen and the *tache cérébrale* are present in many cases, especially in children, but are of no diagnostic importance. The urine often contains a slight trace of albumin and occasionally a few hyaline casts. Retention of urine is not uncommon in adults, but is much less so in children.

In adults there is usually a striking contrast between the rapidity of the pulse and the other symptoms. In a large proportion of cases the pulse is slower than normal in spite of the elevation of temperature and severe nervous symptoms. This symptom is not often observed in children, in whom the pulse is often very rapid. In both adults and children there is a marked variability in the pulse-rate at different times in the day. The variations may exceed twenty or thirty pulse beats in a minute. In cases which terminate fatally there is usually a marked increase in the pulse-rate. There is usually nothing striking about the respiration. It may be somewhat increased in rate, but is often within normal limits unless there is some complication in the lungs. The area of splenic dulness is rarely more than slightly increased and the spleen is not often palpable.

Conjunctivitis is such a constant symptom that it can hardly be considered a complication. It usually occurs within a few days of the onset. Severe lesions of the eyes are not rare. They may be caused by degeneration of the nerves or by extension of the inflammation from the meninges into the retina and choroid. Of these severe lesions optic neuritis occurs most frequently and may be followed by atrophy of the disc. The inflammation of the retina may be mild or severe and in some cases produces partial or total blindness. Some cases in which the lesions are severe recover their sight later. A few cases have been observed in which moderately good vision has been restored after some degree of atrophy of the discs. Irido-choroiditis occurs more rarely. Councilman claims that it is caused by direct extension of the inflammation from the meninges and is not metastatic in this form of meningitis. Optic neuritis may occur without showing external evidence of its presence and without much disturbance of vision.

Lesions of the auditory nerves and internal ears are quite common and are caused by extension of the inflammation from the meninges along the auditory nerves to the labyrinth. These lesions are severe and often cause permanent

and complete deafness. Acute suppurative inflammation of the middle ear occurs quite frequently. It may be caused by direct extension from the brain, or in some cases may be produced by other pathogenic organisms which reach the ears by way of the Eustachian tubes.

There is much variation in the frequency of joint complications in different epidemics. In the epidemic in Nauplia reported by Kotsonopolus this complication occurred in almost all cases. In most epidemics the number was limited. The symptoms consist of acute swelling, redness, and pain, which subside after a few days. The knees, ankles, wrists, and elbows are the joints most often involved. In many cases only one joint is affected. But little is known of the nature of the lesions. Still claims that the disease is not in the joints, but is in the sheath of the tendons in the neighbourhood of the joints. He has found the diplococcus intracellularis in one case.

Complications in the lungs do not occur so frequently as in the eyes and ears. Focal pneumonias are not uncommon and are caused in some cases by the diplococcus intracellularis. In others they are due to a mixed infection by the pyogenic organisms. Croupous pneumonia caused by the pneumococcus is much rarer than focal pneumonia. Lesions of the heart are very uncommon. A few cases of acute endocarditis have been reported in which the cause was not determined. Nephritis is a very rare complication. I have found no record in the literature of cases of septicæmia caused by the diplococcus intracellularis.

Foudroyant cases are not very common. They appear to have been much more frequent in earlier epidemics. These cases prove fatal in a few hours—usually from 12 to 36. The onset is sudden and severe, beginning with fever, headache and vomiting, and at times with convulsions, more especially in children. The initial symptoms are rapidly followed by stupor and unconsciousness. The temperature may be high; the skin becomes grey and there are usually multiple small hæmorrhages in the skin of the body and extremities. The spinal symptoms may not develop and the clinical picture may resemble septicæmia more than meningitis.

Acute cases run their course in from two days to two weeks. Although the general type of these cases is similar there are many individual variations. In some cases almost all of the symptoms which have been enumerated may occur; in other cases several of them may be absent. The cases differ also in the sequence and time of occurrence of some of the symptoms. There are also marked differences in the intensity of certain symptoms. Quite a large proportion of the cases show characteristic remissions and exacerbations in the severity of the symptoms at short intervals, but there still remains quite a number of cases in which exacerbations and remissions do not occur; these patients continue in about the same condition for a varying number of days and then the symptoms either gradually subside and recovery takes place or severe symptoms intervene and prove fatal, or a chronic form of the disease develops.

Intermittent cases differ from acute cases in having one or several acute exacerbations with intervals of several days during which the temperature may be normal or more or less elevated, but the cerebral and spinal symptoms disappear and the patient appears to be convalescing. This is followed by a return of the acute symptoms, which may last for several days as before. Sometimes two or more of these exacerbations occur. The intervals between the acute attacks rarely exceed a few days, but several cases have been reported in which the intervals lasted for from two to three weeks. Some cases die during an acute exacerbation, others recover after one or more attacks, and in some cases a chronic form of the disease develops which may terminate fatally or in recovery. Emaciation is a marked symptom in the intermittent cases.

Chronic cases begin with the usual acute onset and succession of acute symptoms. After a varying number of days the temperature subsides and may remain normal, subnormal, or slightly elevated for weeks. The cerebral and spinal symptoms persist with varying degrees of severity. Sometimes the patients show little or no evidence of meningitis for several days and then the symptoms recur. The increase in severity of the symptoms may be accompanied by rises in temperature, although the latter often remains normal or subnormal. At times elevations of temperature occur without any marked symptoms. The symptoms are generally more or less mental disturbances, headache, pain and tenderness in the neck and spine and retraction of the head. Emaciation is very marked. The patients usually take but little food and gradually grow weaker. At times there is temporary improvement in the cases which end fatally. In the cases which recover there is usually a gradual cessation of the symptoms. When the disease ends fatally death usually takes place suddenly and quietly. When lesions of the eyes and ears occur in chronic cases they do so in the early stage of the disease at a time when the acute inflammation is present in the meninges.

Mild cases may begin with the same sudden onset as the other varieties, so that in the beginning it may be impossible to determine that the disease is going to pursue a mild course. In general, however, the symptoms are milder and subside after a varying number of days.

Aborted cases are described by Strümpell as beginning with sudden and severe symptoms which rapidly subside after a day or two.

Many of the symptoms of epidemic cerebro-spinal meningitis are so constant and characteristic that the diagnosis is not difficult in a large proportion of the typical cases if one takes into consideration the whole picture of the disease: the sudden onset, the constant occurrence of cerebral and spinal symptoms early in the disease, the tendency to variation in the intensity of the nervous symptoms from day to day, the absence of correllation between the nervous symptoms and the temperature and pulse, the eye and ear complications, and the frequent occurrence of herpes. Chronic cases when seen late in the disease are the most difficult to diagnosticate and the diagnosis may depend upon obtaining an accurate history of the onset and earlier symptoms. In several instances a diagnosis of chronic cerebro-spinal meningitis has been made by means of lumbar puncture when all other methods of diagnosis had failed. The diagnosis may be difficult or impossible in the early stage of the disease and in mild cases without the aid of lumbar puncture. Furthermore, it is important, as Councilman has pointed out, to obtain all the information possible about the different varieties of meningitis with regard to their etiology, frequency of occurrence, and termination. This can only be accomplished by means of an accurate method of diagnosis, such as is furnished by lumbar puncture.

When symptoms of any variety of active meningitis are present it is very rare to obtain spinal fluid in which, after standing for several hours, one cannot find fibrin or cells microscopically. In many cases it is even possible to find slight evidence of inflammatory exudation when the patients are convalescent. This method of examination fails at times, as do all methods of examination, but I believe that it does so less frequently than any other clinical means of diagnosis, such as the examination of the sputum, urine, and blood, Widal's serum test, &c. This belief is based upon work done by me during the past three years and includes upwards of 200 punctures. The technique of obtaining and examining the cultures and of making the microscopic examinations of the fluid have been systematically and carefully performed during this period. The results obtained warrant conceding a higher place to this than to other methods of clinical diagnosis. There are fewer sources of error to modify the accuracy of this test than in the others. The spinal fluid either contains cells and fibrin which denote inflammation of the meninges or else the fluid is perfectly clear and contains neither cellular elements nor fibrin. In the other tests various diseases or pathological conditions may give similar results, or at least so modify the results as to make a positive diagnosis impossible in many cases, in addition to the negative results which are obtained in a relatively large number of cases.

It is not necessary to describe again the technique of the operation. It may be well, however, to allude to some of the sources of error. In some cases one fails to obtain any fluid. This may be due to several causes: the needle may not enter the spinal canal; the needle may be in the spinal canal but outside the dura mater—that is, between the dura mater and the wall of the canal; the needle may be in the sub-arachnoid space but may be occluded by a blood-clot or a small particle of skin; the needle may be in the sub-arachnoid space but its point may be buried in the dura mater on the opposite side, or the lumen of the needle may be obstructed by resting against one of the nerves. To control these sources of error it is necessary to have a wire which is large enough to fill completely the lumen of the needle. This wire should of course be sterile. If the wire is much smaller than the lumen it is

likely to pass through, or to one side of, an obstruction in the lumen and may not remove it. If the lumen is shown to be clear by passing a wire and a slight withdrawal of the needle does not cause the fluid to flow then in most cases it will be found that the needle has not penetrated the dura mater but is outside of it. To obviate this it is necessary to withdraw it for a distance not sufficient for it to leave the spinal canal and then to thrust again, directing the point more towards the median line. If these various procedures be performed one will rarely fail to obtain fluid.

The chief source of error in the examination of the fluid is a reliance upon the macroscopic appearances of the fluid alone, although in many cases they are characteristic. A very slight admixture of blood will render the fluid cloudy. The quantity of blood may not exceed the fractional part of a drop and still will produce a diffuse cloudiness. In most cases even this small quantity imparts a slight tinge of yellow to the fluid and after the fluid has settled the blood collects in a small drop at the bottom of the test-tube. When such a small quantity of blood as this is present there is no formation of fibrin, and it is usually easy to exclude the presence of inflammatory exudation microscopically from the absence of fibrin and leucocytes. If, therefore, blood appears at the end of the needle it is necessary to allow a sufficient quantity of the fluid to escape until the latter appears to be clear. It seldom is necessary to allow more than one cubic centimetre to escape in this way. The fluid after this is done is still very likely to contain a trace of blood, but not enough to interfere with the later examination. If the spinal fluid does not become clearer at once it is generally because the point of the needle is scratching the membranes, and it is necessary to withdraw it a little or to slightly alter its position. If considerable blood is mixed with the fluid there will be a formation of fibrin later. The fluid may be slightly cloudy from particles of dust which may be in the tube or come from the cotton at the upper part. The microscopic examination readily detects this, even if one is not certain from the macroscopic appearances. Not infrequently larger white particles of epidermis are present in the fluid; they should never be mistaken for the very fine diffuse cloudiness due to cells. Sometimes a faint diffuse cloudiness may be caused by the presence of bacteria and their products in cases of septicæmia. In these cases the cultures will show the organisms and there will be no evidences of inflammatory exudation microscopically.

The technique of the microscopic and bacteriological examinations of the spinal fluid are important. After it has stood for some time there is a formation of fibrin in cases in which the fluid is slightly or moderately turbid and a precipitation of pus when the exudation is more purulent. In some instances the quantity of the fibrin is small and may adhere to the bottom of the test-tube. The supernatant fluid is left perfectly clear under these circumstances, and unless the fluid is carefully examined this sediment may be overlooked. It is necessary in all such cases to scrape the bottom of the test-tube with the platinum wire in order to dislodge the fibrin. If the test-tube has been allowed to remain in a slanting position and only a small quantity of exudation is present it adheres to the side and may not be noticed. This may account for some of the negative results obtained in cases of meningitis, in which the fluid was said to have been perfectly clear like normal fluid. In many cases even when the quantity of fibrin is small it adheres to the bottom of the tube by its lower end and the remainder floats in the fluid like a web. The fibrin contains the cells in its meshes. Cover-glass preparations of the fibrin should be made, dried by passing them through the flame of a Bunsen burner, or alcohol lamp, and stained. Löffler's methylene blue gives the best results. By means of this stain the nuclei of the cells are very clearly defined so that the character of the exudation can readily be detected. In addition it stains any organisms which may be present. To differentiate the diplococcus intracellularis from other organisms a second cover-glass preparation should be stained by Gram's method. (By this method the intracellular diplococcus becomes decolourised.) Cover-glass preparations may also be stained for tubercle bacilli by appropriate methods of staining, but the organisms are so few in number that more accurate results are obtained by inoculating guinea-pigs with the spinal fluid. In cases of tuberculous meningitis this produces tuberculosis in the guinea-pig in from four to six weeks.

The cells in the spinal fluid from cases of epidemic cerebro-spinal meningitis are chiefly polymorpho-nuclear leucocytes—"pus-corpuscles." In addition there are found a varying number of small mononuclear cells—"lymphoid cells"—and large phagocytic endothelial cells. These latter cells are very large and have large oval or round nuclei. In the protoplasm of some of them one finds leucocytes, blood-corpuscles and particles of cell detritus. In the protoplasm of some of the "pus corpuscles" one usually finds one or more diplococci. Sometimes a leucocyte contains large numbers of them. In this variety of meningitis the majority of the organisms are contained within the "pus corpuscles" and are found only in limited numbers outside of the cells.

Towards the end of the disease in acute cases which terminate in recovery the "pus corpuscles" show evidences of degeneration. The nuclei do not stain sharply and many of the cells appear to be disintegrated. This appearance indicates that the acute inflammatory process has subsided, at least for a time, and may have some prognostic value. In chronic cases there are fewer "pus corpuscles." The majority of the cells have single round nuclei. Some of them are smaller than "pus corpuscles," have very little protoplasm and are evidently "lymphoid cells." Others are of about the same size as "pus corpuscles," with large round nuclei and considerable protoplasm, and are probably "plasma cells." (Both lymphoid and plasma cells are present in large numbers in the meninges in chronic cases.)

Cultures should be made on blood serum at the time of puncture by allowing one or more cubic centimetres of the spinal fluid to drop into the culture tube. Care must be taken to prevent the fluid from running down the side of the tube at its upper part in order to avoid contamination by wetting the portion of the tube which comes in contact with the cotton. The operator should handle the end of the needle as little as possible over which the fluid runs. After obtaining the fluid in the serum tube allow it to flow over the surface of the serum and to remain in contact with it for at least a minute or two. In a number of earlier cases in which organisms were present in the cells and in which symptoms of active meningitis were also present I have failed to obtain cultures by the use of a small platinum loop filled with exudation because the quantity was too small. Furthermore, it seems probable that in a number of cases failures to obtain a growth of the intracellular diplococcus have resulted from making cultures from the sediment after the fluid has stood for several hours, even when considerable quantities of the exudation were used.

As to the variations in the turbidity of the spinal fluid and their relation to the severity of the symptoms the following results are derived from the examination of the spinal fluid from thirty cases of epidemic cerebro-spinal meningitis. In many of these two punctures were made at different times and in some cases three or four. Within certain limits there is some relation between the degree of turbidity of the spinal fluid and the severity of the symptoms. The acute cases almost always show a markedly turbid fluid during the early part of the disease when the symptoms are severe. In some cases there is an immediate formation of purulent sediment in the bottom of the test-tube, but in the majority of cases the fluid is simply very turbid and after standing contains considerable fibrin and many cells. The cases in which a purulent sediment forms may prove fatal within a few days, but, on the other hand, the same kind of fluid may be obtained in cases which are only moderately severe at the time when the puncture is made.

Moderately severe cases may show well-marked turbidity at first, and later punctures, made at intervals of several days, may show a diminution in the turbidity of the fluid and yet the symptoms may be severer than they were at the time of the first puncture. In other cases the diminution in turbidity may correspond to some extent with the improvement in the patient's condition. If the fluid in acute cases is obtained late in the disease at a time when the acute symptoms have for the most part subsided it may be clear in some cases, and the microscopic examination may fail to detect evidences of meningitis. In other cases the cloudiness may be very slight and very little fibrin and only a few lymphoid cells and "pus corpuscles" may be found by microscopic examination. So that beyond certain limits there is no constant relation between the degree of turbidity and the severity of the symptoms.

In the intermittent cases the spinal fluid may be clear during the intervals that the patient is without symptoms and become turbid again during the exacerbations. This is

by no means constant, however. The fluid is very likely to show a slight degree of cloudiness in these cases in spite of the absence of symptoms. It is impossible to say how long a slight cloudiness may persist in chronic cases. I have found more or less cloudiness due to cells in a number of chronic cases in which the disease had lasted for several weeks. From my experience thus far I would attach more importance to the results obtained by lumbar puncture than to any other means of diagnosis in the doubtful chronic cases seen late in which even slight cerebral or spinal symptoms still persisted. In mild cases the exudation may disappear from the spinal fluid in a few days. In the questionable cases in which the fluid appears to be perfectly clear it is necessary to make a very thorough examination of the bottom of the test-tube with a platinum wire after the fluid has stood for several hours.

There is no constant relation between the severity of the disease and the number of organisms present in the spinal fluid. If cultures are carefully made at the time of puncture and if the blood-serum is good one may expect to obtain a growth of the diplococcus intracellularis in the majority of acute cases provided the patient has symptoms of active disease. In a number of cases I have obtained a growth of the diplococcus after the disease had lasted for more than two weeks. In one case which lasted for five weeks I obtained growths in every one of five punctures made at intervals of one week. On the other hand, there have been cases in which the spinal fluid was very turbid and in which a purulent sediment formed and no colonies were visible on the serum after twenty-four hours, although a moderate number of diplococci were present in the water of condensation and a very few were obtained by scraping the surface of the serum with the wire. In one such case lumbar puncture was performed three days after the onset of the disease at a time when the cerebral and spinal symptoms were intense. In this case in addition to the very slight growth on the serum no organisms were found in the "pus corpuscles," although the exudation was purulent. It is difficult to give a satisfactory explanation of such cases. It seems improbable that the organisms were dead and therefore did not stain in the cells or grow on the serum three days after the onset with persistence of severe acute symptoms. One rarely obtains a growth of the intracellular diplococcus in chronic cases. In some instances, however, a few diplococci are found in some of the "pus corpuscles," and at times a limited number of organisms can be obtained by scraping the surface of the serum when there are no visible colonies. In mild cases the organisms are apparently not very numerous and one would expect to obtain a negative result so far as the cultures are concerned unless the puncture were made soon after the onset.

SUMMARY.

1. There is no constant and definite relation between the severity of the symptoms and the degree of turbidity of the spinal fluid.
2. There is little or no connexion between the number of organisms and the number of cells present in the spinal fluid.
3. In many cases there appears to be but slight connexion between the number of organisms found in the spinal fluid and the severity of the disease.
4. Unless the subsequent examination of the spinal fluid is carefully performed no deductions as to the presence or absence of meningitis are justifiable.

PROGNOSIS.

It is impossible to say how long the disease will last or what the termination will be in a given case until the lapse of a considerable interval of time during which the patient is free from symptoms. The length of this interval cannot be definitely stated, but in most cases two weeks is a safe estimate. In acute cases it is impossible to say that the disease will not become chronic or intermittent in type later. Furthermore, the disease may be moderately severe at first and increase in severity later and prove fatal. In the intermittent type of the disease the symptoms during exacerbations may be more or less severe than those of the onset. In chronic cases the mortality is estimated to be fully as high as in the acute variety. The patient may die from the results of the lesions produced early in the disease or from complications, such as pneumonia or persistent vomiting. The mortality varies very much in different epidemics. Hirsch estimates it at from 20 to 70 per cent.

TREATMENT.

Prophylactic.—Nothing of practical value is known about the method of infection or about predisposing causes. The disease is a primary infection and frequently attacks apparently healthy people; therefore no definite prophylactic treatment can be formulated. Although the disease appears to be but slightly, if at all, contagious it can do no harm, in the absence of positive knowledge as to the method of infection, to isolate the patients.

Curative.—There is no known remedy which either checks the disease or shortens its course. In a disease like cerebro-spinal meningitis, in which such marked variations in the severity of the symptoms occur at short intervals and in which so many types are observed, one must be very cautious and not confound apparent therapeutic results with coincidences. No effectual method of treatment has been suggested that I am aware of. The older methods—consisting of cautery of the spine, cupping, leeching, purging, ice-bags, and mercurial treatment—all appear to have been faithfully tried. There is no evidence that any of these procedures accomplished anything more than to increase the patient's discomfort in some instances.

Symptomatic.—Some relief from the nervous symptoms has been obtained by the use of sedatives and analgesics. It is difficult to estimate their value in such a variable disease. Delirious and restless patients are sometimes quieted by the bromides. The pain and tenderness in the head and neck may require some preparation of opium at times. Antipyrin and allied drugs have been used, but have not proved of much value unless large doses were given. The danger to be apprehended from the depressant action of these drugs is well known and it is safer not to use them. Salicylate of soda has been tried by various men in cases in which joint complications occurred. There is some difference of opinion as to its efficacy. In the cases which run a long course the most important indications are to sustain the strength of the patient by feeding and stimulation. It is important to keep a daily estimate of the quantity of food taken by these patients. In the long-continued cases the patients often refuse food for several days at a time and it is necessary to use a stomach tube in these cases at such times. This is especially the case in children. Complications must be treated as they arise. The convalescent stage is often long and requires careful supervision. The emaciation, weakness, and anæmia demand appropriate hygienic, dietetic, and tonic treatment.

In conclusion, a few words about the therapeutic value of lumbar puncture may not be amiss. The value of this procedure is purely diagnostic. One reads from time to time of recoveries from meningitis following the operation and of other cases in which the symptoms were ameliorated. I have never seen any such cases although constantly on the watch for them. A temporary relief, lasting for a few hours, has followed the operation in a few cases, but the same remissions frequently occur without any treatment. The fact that in almost all cases no change of any kind is visible in the patient's condition after the operation is strong evidence against its therapeutic value.

An extensive bibliography may be found in Councilman, Mallory and Wright's work entitled, "Epidemic Cerebro-spinal Meningitis," &c. Report of the Massachusetts State Board of Health, 1898.

WATER-SUPPLY OF PLYMOUTH.—The Mayor of Plymouth formally dedicated the new water-storage reservoir on Sept. 21st in the presence of thousands of the citizens. The reservoir, which has just been completed, is at Burrator, on Dartmoor, and was commenced in August, 1893. It has an area of 116 acres and a capacity of 651,000,000 gallons. The cost of the undertaking has been £200,000. The proceedings were of a very enthusiastic character and concluded with a banquet at the Plymouth Guildhall in the evening.

DEVON COUNTY ASYLUM.—At the meeting of the Devon County Council held recently the committee of the lunatic asylum reported that there were 1116 patients in the asylum and that Dr. George Symes Saunders had resigned after 28 years' "most able and faithful service." He has been granted a retiring allowance of £742 per annum and this amount the committee asked the Council to confirm. The report was adopted.

THE INFLUENCE OF POSITION IN FRACTURES AND DISLOCATIONS AS SHOWN BY A COMPARISON OF THESE INJURIES IN MAN AND ANIMALS.[1]

BY EDRED M. CORNER, B.SC. LOND., M.A., M.B., B.C. CANTAB.

THE various adaptations which have occurred through man adopting the erect attitude are extensively dealt with in the large text-books of anatomy. The effects of position on the soft parts have to some extent been worked out, but so far as I know no work has been done upon the effects of the quadrupedal and bipedal positions upon injuries to the bony parts. These I have tried to work out in their principal directions. The subject matter therefore consists largely of what may be called surgical mechanics, and to this I have added the data drawn from veterinary surgery.

The mechanics of the injuries to the bones and joints in man can be easily studied as there is abundant material, but it is difficult to obtain the accurate data of fractures and dislocations in animals because an attempt is rarely made to rectify these, the animals being destroyed as they have no longer their full working value. This part of veterinary surgery has never been worked up to anything like the extent that it has been in man. The differential diagnosis and treatment are very shortly treated and the etiology of fractures and dislocations is almost untouched. In order to remedy this defect to some extent I have consulted all the cases which I could find reported in British and some American literature. Upon such material it is naturally impossible to build up reliable statistics as to the relative frequency of these injuries. Still, as fractures and dislocations are rare in animals and their study apparently of little practical use, the cases are recorded even when they do not necessarily present only usual features. Again, in consequence of the procedure after injuries in animals being usually to kill and not to cure the reports generally contain, besides an account of the injuries as made out in the living, descriptions of the post-mortem conditions found. These cases which are complete are of the greatest value, and I have neglected as too indefinite most of those in which such an examination was not made. In this way I have examined the records of more than 350 cases. I propose dealing only with those injuries which occur both in man and animals under conditions that are comparable. For example, I have omitted the fractures and dislocations which are peculiar to man owing to his fore-limb being specialised into an arm. Similarly some very interesting fractures in animals have been omitted, as that of the navicular bone in the horse, on account of the fact that there is no corresponding bone in man. Because the horse is the quadruped that is most frequently damaged and has been in consequence most fully studied I have selected it as the type to compare with man.

Broadly speaking, fractures are of rare occurrence in the horse in comparison with man and dislocations are still rarer. Animals agree with man in so far that they suffer less often from dislocations than fractures. The principal mechanical reasons for the fact that dislocations are less frequent in animals than in man are twofold — namely, the very strong muscles and tendons which surround the joints and the simple, limited movements allowed in them. In quadrupeds the presence of four supports to the trunk gives great stability to the animal, but these supports, which are disposed in pairs, are differently arranged with respect to their several segments. The ways in which the different segments of the limbs are placed give rise to the principal differences in the fractures and dislocations which occur in man and animals. It will add to the clearness of the following account if I first briefly state what these arrangements are. The long axes of the ilium and scapula both make angles with the long axis of the body of about 45°, that of the former directed downwards and backwards and the latter downwards and forwards (Fig. 1). From this point the angles in both limbs differ. The ilio-femoral angle is just about 90° and the humero-scapular 105°; the femoro-tibial (knee) 90°, the humero-radial (elbow) 150°; the tibio-tarsal 135° and the radio-carpal is practically 180°, the radius, tarsus, and metatarsal bone being almost in one straight line and the metatarso-phalangeal angle is about 165° and the corresponding carpal angle 135°. Speaking generally the bones of the fore-limb approximate in some degree towards a straight line, which accords with their predominant function of weight-bearing. The hind-limb, which is eminently propulsive, has its several segments set at more

FIG. 1.

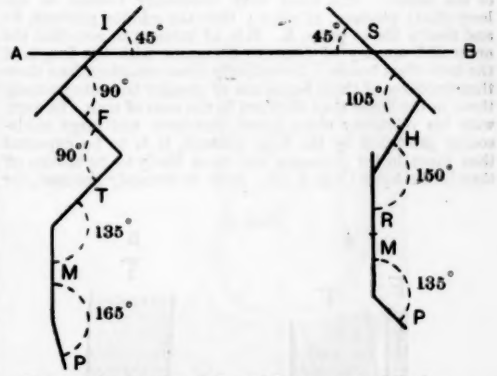


Diagram showing the relations of the segments of the fore- and hind-leg of a horse to each other. A, B, Longitudinal axis of body. Fore-limb: S, Scapula; H, Humerus; R, Radius; M, Metacarpal; P, Phalanges. Hind-limb: I, Ilium; F, Femur; T, Tibia; M, Metatarsal; P, Phalanges.

acute angles and is therefore bent in a zigzag manner like a spring. As the body-weight acts vertically at all these joints a constant strain will be thrown upon the muscles and tendons passing over them. If the ligaments bore this strain, movement in the same direction as the natural condition would be prevented. For example, the knee is naturally flexed to about 90°, and if the tendency of the body-weight to flex it further was prevented by ligaments the animal would be unable to bend its knee beyond this angle. These points will be severally dealt with in respect to their influence in the accounts of the various injuries.

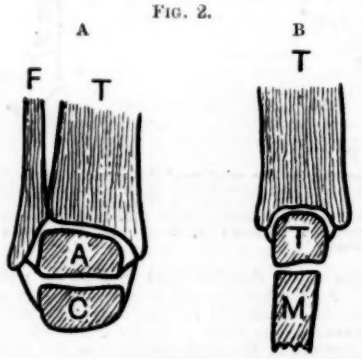
FRACTURES AND DISLOCATIONS IN DIGITIGRADE AND PLANTIGRADE ANIMALS.

The first problem to be considered is the influence of digitigrade and plantigrade progression upon injuries. To make this clear the mechanical conditions must first be considered. The distance from the ground to the ankle-joint represents the length of the lever which acts on this joint. This lever, or foot-lever as it may be called, in man consists only of the astragalus and calcaneum, the total length of the perpendicular being not more than 3 in. In the horse, however, the foot-lever consists of three phalanges, the metatarsal bone of the tarsus, its length being about 18 in., the corresponding carpal lever being about 18 in. The mechanical value of this lever is, then, six or seven times greater than that in man. Besides the length of the lever its intrinsic strength must also be considered. In man it is short and thick, consisting of only two segments, which are firmly united by an inter-osseous ligament, whereas in the horse it is very long, many-jointed, and comparatively thin. In the latter, therefore, although the foot-lever has from six to seven times the mechanical value that it has in man, it is relatively weaker. The socket in which this lever works will materially influence dislocation in two ways, by its size and depth. Both these conditions must be gauged relatively to the length of the foot-lever, the absolute size and depth being of no value in comparisons. The ankle-joint is relatively larger in man and it is also deeper inasmuch as the malleoli are relatively longer. As in the horse the mechanical advantage of the foot-lever is much greater and it plays upon a relatively small and shallow socket it might be expected that dislocation would occur more commonly than in man. This, however, is not so; Müller says he knows of no cases of such a luxation. The

[1] Thesis for the degree of M.B. in the University of Cambridge.

explanation therefore must undeniably lie in the weakness of the foot-lever. This, as has been said, consists of many parts which are bound together by very strong ligaments. Instead of these dislocations of the ankle it is found that the foot-lever breaks and the records show that the bones break before the ligaments. The metatarsal and metacarpal bones form just over half the length of each foot-lever and, as might be expected, are the bones most frequently broken. The metacarpal bone is broken more frequently than the metatarsal, probably in consequence of its being more exposed to injuries, such as in stumbles, turning, &c. I examined the records of 15 cases of the former and 5 of the latter. The bone next commonly broken is the long (first) phalanx, 10 cases; then the middle phalanx, 6; and finally the os pedis, 5. It is of interest to note that the order of frequency of fracture decreases with the length of the individual bones. Accordingly these considerations show that fractures of these bones are of greater frequency among those in the horse than they are in the case of man. In man, with his relatively short, broad foot-lever and large ankle-socket produced by the long malleoli, it is to be expected that these latter processes are more likely to be broken off than in the horse (Fig. 2 A). Such is certainly the case, for

FIG. 2.



A, Diagram of bones about the ankle-joint of man. T, Tibia. F, Fibula. A, Astragalus. C, Calcaneum.
B, Diagram of bones about the ankle-joint of the horse. T, Tibia T (on the small bone), Tarsus. M, Metatarsus.

dislocation in man at the ankle is extremely rare without such a fracture. In the horse Leisering records such a fracture found post mortem and Müller suggests that Louchard's case may have been another. These are the only two cases I could find. Besides the dislocation of the ankle-joint with fracture of the malleoli, plantigrade animals differ from digitigrade animals in having the calcaneum fixed by contact with the ground. By virtue of this they are liable to astragaloid and subastragaloid dislocation. Digitigrade animals are exempt from these injuries as the calcaneum is never so fixed. Owing to the plantar arch in man the calcaneum is directed backwards and downwards and is fixed by contact with the ground only at its hindermost part. In consequence, the whole length of the calcaneum acts as a lever to break the inter-osseous ligament between it and the astragalus. There is a similar lever from the heads of the metatarsal bones to the tarsus.

Another point in connexion with dislocation at the ankle-joint is that in man the movements permitted there are more extensive. This certainly gives an additional liability to dislocation but may also save him from injury. For instance, violence applied to the outer side of the foot in man may result in nothing more than a sprain of the ligaments, but in the horse in which the movements at the ankle-joint are limited such violence is very liable to lead to fracture. The ankle-joint in the horse forms anteriorly an angle of 135°, whilst the wrist is practically in one straight line with the arm. There will be a constant strain upon the calcaneum, which is very rarely broken in the horse; it is then usually broken by muscular violence. Such an accident occurs very rarely in man, as for instance when he adopts digitigrade progression, as in running, jumping, &c.

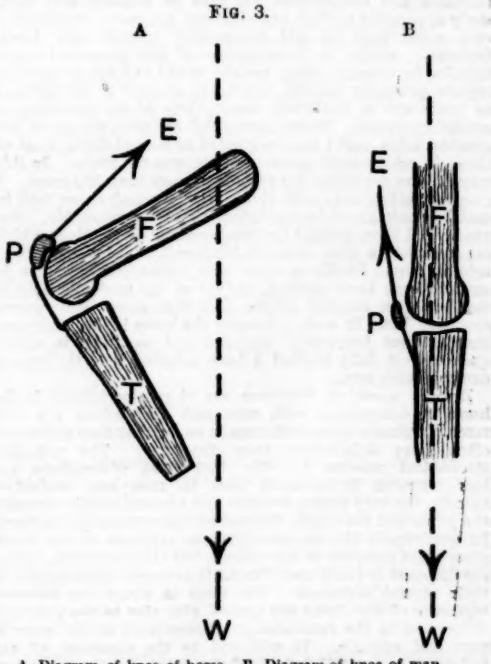
FRACTURES OF THE FOREARM AND LEG.

The tibia is the most commonly broken bone in animals. In its causation it differs from that in man by being almost invariably caused by direct violence, whilst in man such a cause is uncommon. As a result of this transverse fractures are commoner in the horse than in man and in transverse fractures the ends of the bones are not unlikely to remain in apposition. It is not therefore surprising to find cases recorded in veterinary literature in which displacement did not occur for some days after the receipt of the injury. This period is of very variable length, as from five to thirty days or more. Williams asserts that in such cases the damage is probably subperiosteal and that this membrane being very strong is sufficient to retain the two fragments together. Nowhere have I found the possibility of impaction considered, though it is not so likely to occur with direct violence. Cases in which displacement does not occur early, as when the bone is broken transversely, do occasionally occur in man. This cannot occur often, for the most common fracture of this bone is produced by indirect violence and the line of fracture is in consequence more or less oblique. Fractures of the fibula are very common in man, whilst in animals with well-developed fibula it as a rule only occurs as the result of direct violence. In the horse the fibula is defective and only exists in the upper third of the leg; Müller asserts that it is never broken. The tibia of the horse has an outer malleolus as well as an inner supplying the wants of the lower end of the fibula (Fig. 2 B). I have shown above that neither malleolus is at all likely to be broken. The radius in the horse is similarly placed to the tibia and suffers, as would be expected, similar fractures. The ulna is only a fine splint-like bone in the horse in its lower part and is very rarely broken. Like the fibula it is sometimes broken by direct violence in cats, &c. The olecranon will be considered after the patella.

FRACTURE OF THE PATELLA.

Gurlt's statistics give the frequency of the fracture of the patella in man as 1·4 per cent. of all fractures. The veterinary text-books state that this fracture is very rare and that when it occurs it results from direct violence; the more

FIG. 3.



A, Diagram of knee of horse. B, Diagram of knee of man. F, Femur. T, Tibia. P, Patella. E, Line of action of quadriceps. W, Line of action of body-weight.

recent works add muscular violence. In a search through American and British literature I have been unable to find a single case. In the horse the knee is naturally flexed to an angle of about 90°, and as the line of action of the body-weight is vertical there will be a continuous strain on the

patella. This strain cannot be resisted by the ligaments, as then further flexion would be prevented, and this is certainly not the case. The strain must therefore be borne by the quadriceps extensor, the patella, and its ligament. With the assumption of the upright position such continuous strain will be lost, as the body-weight is transmitted directly from the femur to the tibia. Both Humphry and Goodsir, later also Meyer, obviate muscular action in their theories of the mechanism of the knee in standing. The patella has therefore lost in man a great deal of its function and may therefore be said to be atrophic. A limit is placed to this atrophy by the value of the patella in walking, running, &c.—i.e., when the knee is flexed. Besides this, in the flexed knee of the horse the patella has to transmit the force through an angle (Fig. 3), and consequently must be a much stronger bone than if it had merely to withstand a nearly pure traction force, as in the straight knee. In adopting the erect attitude the ligamentum patellæ has been shortened, so to speak, in order to take in the slack. Man's patella, therefore, rides relatively lower on the femoral condyles than in the horse. This enables it to be in contact with the femoral condyles near its middle and not at the ends. The area between the two horizontal lines on the articular surface indicates this area of contact. The bone is consequently snapped by the contraction of the quadriceps muscle. This is the usual method given to explain the fracture by muscular violence, but a most important factor is not considered. The knee is flexed at the time and in consequence the body-weight will work hand in hand with contractions of the quadriceps.

In the horse, then, we have a stronger patella which by means of a longer ligamentum patellæ rides higher on the femoral condyles. Nearly the whole of it is in contact with the femur at the same time. Therefore it differs from man's in being almost entirely out of harm's way. Considering these points and the extreme rarity of the fracture it is very improbable that it is ever broken by muscular violence. The statement to this effect in the veterinary works in all probability arose from the observations in the treatises on the surgery of man. Mr. Anderson shows that this injury is more common in people of feeble habit of body from the St. Thomas's Hospital returns of 1880–1890. This frequency, he says, "points to the predominant influence of a second factor, a diminished textural resistance in the bone." To this may be added other clinical facts. It is by no means infrequent to find refracture in a different place after wiring has been done. May it not be that here a new piece of cloth has been put in an old garment? Again, one often sees cases of fractured patella in whom the other patella has been broken before or which breaks subsequently. Mr. Anderson has on clinical grounds pointed out an atrophic condition of the patella related to the age and condition of the subject. This is a condition of the individual and differs from the suggestion I have made from our ancestry. To these must be added Poirier's evidence of the great diminution of the compact bone with increase of age.

Comparing the patella of man with that of a typical quadruped it is seen that the former is relatively shorter and broader, its breadth equalling and usually exceeding its length. It is thinner also, as is shown by calculating its thickness even in terms of the relatively shorter length. Thus it may be said to be the weaker, and this is supported by comparing sections of the bones. In man there is less compact tissue round it and the cancellous tissue has wider meshes and weaker trabeculæ. The structure of the patella on all points bears out the weaker condition found in that of man which had been suggested above from *a priori* reasoning.

FRACTURE OF THE SESAMOID BONES.

One of the most interesting fractures in the horse has no counterpart in man, but as the bones are placed under somewhat similar circumstances as in the patella I will give a brief account of them. The sesamoid bones are strong masses in the flexor tendons situated on the metatarso-phalangeal and corresponding carpal joint (Fig. 4). The joint is hyper-extended to an angle of about 135° and in consequence of the vertical line of action of the body weight a constant strain is borne by these bones. As they are situated over the joint they are more similarly situated to the human patella, but they agree with the quadruped's in that they are in contact with the overlying bones in almost their entire length. They are therefore not liable to be broken across the lower end of the metatarsal bone. Fracture occurs by muscular violence and differs from the common results so produced in the extraordinary comminution which takes place. The bones are broken in as many as from 5 to 30 pieces; the fracture may also occur in all the fore-limbs simultaneously. I have analysed eight papers upon this subject. Hart of Calcutta says that it was the commonest fracture which he had to deal with, and that it occurred chiefly in young horses from Australia after a voyage of from 60 to 70

FIG. 4.

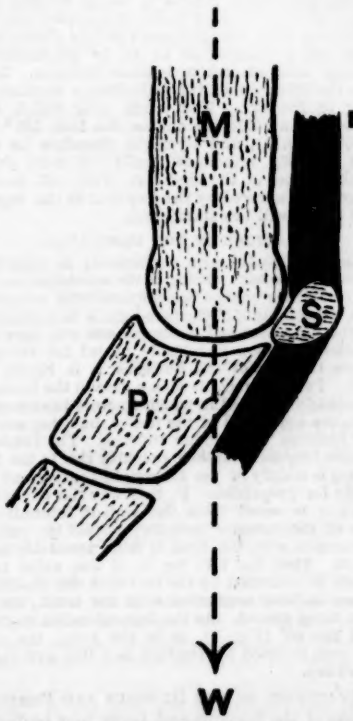


Diagram of metacarpo phalangeal joint of horse. M, Metacarpal bone. P_1, Proximal phalanx. S, Sesamoid bone in flexor tendon F. W, Line of action of body-weight.

days, during which they stood continuously and suffered the greatest privations. When landed they bolt maniacally and after going a short way collapse. Post mortem he demonstrated that the sesamoid bones were lighter and more cancellous than normal. Professor Varnell previously had also described the same morbid condition as predisposing to the fracture, but offered no suggestion as to the cause of it. Hart also showed that if care was taken in landing and for some time afterwards this predisposing condition could be recovered from. Both the above authorities have shown the predisposition, but have not worked out the mechanism of the fracture. The bones are situated over the metatarso- and metacarpo-phalangeal joints and also lie in contact with the bones; the joint is hyper-extended to 135° from the vertical. As the animal gallops, each time its legs touch the ground, a violent strain will be thrown on the flexor tendons and the sesamoids. Also, as the bones lie directly over the joint, the lower end of the metatarsal bone will be driven violently upon them. This action will be somewhat like that of a hammer, and considering the great tension on the bones the resulting comminution may be explained. In Hart's cases besides the predisposing condition of the bones there is the excessively violent muscular action from the excitement of landing after the long voyage.

A point which may deserve explanation is that in from 60 to 70 days of standing could atrophy be induced in the bones? Such conditions should normally produce an hypertrophy, but continuous strain with the malnutrition and greatly impoverished health might produce the atrophy. Leisinger records a case of transverse fracture, the bones being probably broken across the lower

end of the metatarsal bones. The sesamoid bones, therefore, present an intermediate condition to the patellæ of man and quadrupeds. They agree with those of man in being broken by indirect violence, but by virtue of being completely in contact with the underlying bones and bearing a continuous strain, differ from it in being broken into several pieces and not into two by a transverse break; they are also placed over the joint, and, though very rarely, are broken transversely by muscular violence. They agree with the horse's patella in being subjected to the continuous strain and being in almost complete contact with the underlying bone, but the horse's patella differs, as shown above, in being situated so as to be practically out of harm's way with respect to indirect violence. They also illustrate the influence of the individual's condition as predisposing to fracture. The joints over which they are placed are set at different angles, the foot 165° and the hand 135° (Fig. 1), and it might therefore be expected that the fore leg sesamoids would be more frequently broken than those of the hind leg. This will certainly to some degree be balanced by the fact that in the legs greater muscular action will be experienced.

FRACTURE OF THE OLECRANON.

The olecranon in the arm corresponds in some degree to the patella in the leg. Owing to the specialisation of man's arm the conditions cannot be compared with advantage; in the horse the condition of the fore-limb is to some extent the same as the hind-limb and a comparison may here be made. Though the olecranon is suitably placed for being broken across the trochlea of the humerus it is hardly ever so fractured. Pernaud records such a case in the horse. Cases are occasionally recorded in which fracture has occurred on a level with the upper end of the radius, but they are scarcely cases of fracture by muscular violence. The reason why it is not more frequently broken probably lies in the fact that the fore leg is mainly of use for weight-bearing and the hind leg mainly for propulsion. In this way the olecranon to a great extent is saved from the violent intermittent contractions of the extensor muscles; should the patella have been continuous with the tibia it must inevitably have been broken off. That the fore leg is of less value in violent movements is indicated by the fact that the shoulder-girdle is nowhere in bony connexion with the trunk, the clavicle of course being absent. As the humero-radial angle is only 150° and not 90° (Fig. 1), as in the knee, the olecranon is not so well situated for fracture as a like structure would be at the knee.

FRACTURES OF THE HUMERUS AND FEMUR.

Fractures of the humerus and femur may be dismissed in a few words. They usually result from direct violence. In the case of the femur of animals the neck is not usually so marked as in man, and, as Müller has pointed out, it is probably less commonly broken. When compared with man both these bones form an angle of 45° to the long axis of the body. In consequence a continuous strain is thrown on the glutei, supraspinatus, infraspinatus, &c., which has led to the enormous development of the tuberosities of the humerus and of the trochanters. The presence of the third trochanter in animals is probably accounted for in this way. Steel records a case in which this was torn off by muscular violence. Besides the third trochanter being present and the large size of the other trochanters the constant strain may account for the shorter neck to the femur, for the longer the neck the greater the mechanical disadvantage of the glutei.

FRACTURES OF THE TRUNK.

The scapula is uncommonly broken in the horse on account of its sheltered position and of its mobility due to absence of the clavicle. Excluding chipping of the glenoid cavity I analysed only 6 cases, none of which presented any features of interest. The pelvis in the horse is far more frequently broken than the shoulder girdle, as might be expected. I collected 25 cases of this fracture, 11 of which were multiple, 6 of the ilium only, 4 of the acetabulum only, and 4 of the ischium only. A favourite situation for fracture is at the narrow neck of the ilium. The ratio of the breadth of the neck to that of the expanded part of the ilium is in the horse 1 in 6, in man 1 in 3. The neck of the horse is relatively less broad and is not thicker. Force applied to the crest of the ilium has the length of the bone for a lever and this lever is longer in man and also possesses a relatively weaker point in the neck, and it is here that the fracture occurs most commonly in the horse. This constitutes a most important distinction to the fractures in man. A similar remark would apply, though with considerably less weight, to the fractures of the ischium in the horse. The position of the pelvis in man and in animals seems to exercise little influence upon its liability to fracture.

The ribs in the horse are occasionally broken by muscular violence, but far more commonly by direct violence. Gabriel records a case of fracture of the first rib by muscular violence during turning. In man the clavicle protects the upper ribs; in the horse this bone is absent, but the position of the fore legs protects them. Müller quotes the returns of the Prussian army for 1891 and gives the fractures of the vertebral column as 30 cervical, 6 dorsal, and 3 lumbar. Of the 22 cases I examined 11 were cervical, 4 were dorsal, and 7 were lumbar. Pure dislocation as in man is very rare and occurs only in the cervical region; a partial dislocation or subluxation occurs more frequently in the horse. The cervical vertebræ most commonly involved were the second, third, and fourth. Fracture alone was commonest in the lumbar region and here the first lumbar vertebra was the usual one broken. The twelfth dorsal was the one most frequently broken of this set. So far they agree with the conditions of man's injuries. But owing to the vertebral bodies articulating with each other by means of a kind of ball-and-socket joint the vertebra in front may be split by that behind. Such a case is recorded by Smith, where the fourth cervical vertebra split the body of the third. The coccygeal or caudal vertebræ are for obvious reasons broken more often in animals than in man. The sacrum is quite as true to its name in animals as in man, being rarely if ever broken.

Of 21 cases of fractured jaws in animals 3 were of the upper and 18 of the lower. Of the latter 5 occurred in the symphysis, which is probably a higher percentage than in man and probably due to the weak union found at the symphysis in animals. The squarer jaw in man allows more easily of fractures to occur other than at the symphysis. Of fractured skull there is little to be said, except that I found recorded 10 cases of the vault (2 frontal, 4 parietal, 2 occipital, and 2 general) and 3 of the base.

DISLOCATION OF THE PATELLA.

Though fracture of the patella is one of the rarest fractures in the horse yet dislocation is the commonest luxation. Around this luxation has cropped up a considerable literature. Certain papers illustrate the interesting evolution of the knowledge of this condition and its mechanical causation. I give a short epitome of them. Spooner says that these cases were taken for cramp; Duboisin describes cases of femoro-popliteal neuralgia. In these last papers Professor Youatt adds an editorial note that the cases are those of dislocation outwards of the patella. "An old practitioner" next frankly narrates the trouble he had with a case and Professor Youatt again enlightens us. The luxation was attributed to mechanical causes such as uneven ground relaxing the extensors; similarly fracture of the neck of the ilium was found to cause it. It was then said that ill-health relaxed the ligaments and led to the absorption of the fat behind the patella and its ligaments and so allowed the luxation. This condition disappeared on return to health. With Golding begins a period of inquiry; he asserted that ill-health and non-development of the femoral condyles caused it. Professor Axe wrote a paper on Adynamic Luxation, giving conditions like those mentioned above. Professor McCall then put forward the various mechanical conditions which might lead to luxation. He added several new ones, as vertical position of the femur, hydrops articuli, &c., to the list. Dollar, in a paper written a little later quotes Chuchu, who says that the luxation is only partial and that the patella gets engaged with the knob of the internal femoral condyle. He also quotes M. Violet, who regards spasm of the internal vastus or paralysis of its antagonistic muscles as a factor. Dollar himself advocates Chuchu's views. Tweedley gives a careful account of dissections he did on these subjects. He supports Chuchu in asserting that the luxation is partial and due to the patella's "temporary arrest on the superior entablature of the femoral condyle." This hooking with the internal condyle he says is aided by the various conditions mentioned above and he gives the muscular spasm after galloping as the occasional cause. Müller now divides the luxation into two classes, dislocation upwards and dislocation to the side, nearly always to the outer side. I have come across only one

notice of the inward luxation of the patella in a horse and that is recorded by Pernaud.

As has been said, in the horse the patella lies relatively higher on the condyles as the ligamentum patellæ is longer and so is thus allowed greater amplitude of lateral movement. In the partial dislocation the flexed knee with the constant strain on the extensors, &c., aids considerably in the locking of the bones. The very large internal condyle prevents the inward dislocations. The continuous strain will also tend to prevent the displacement of the patella round its long axis. I have found no reference to such a displacement in veterinary literature. In man, as in the horse, dislocation outwards is by far the commonest. It also agrees in being most frequently only partial, but owing to the erect position the partially dislocated bone is not fixed by the weight of the body as in the horse. The lower end of the femur in man differs from that in the horse in the external condyle and its articular surface extending higher up the front of the femur than the internal, where it is also more prominent. In the horse precisely the opposite condition exists, yet in both cases outward dislocation is the commonest. The explanation probably is that in assuming the erect attitude the extensor muscles have acquired a more outward pull; the pelvis is broader and the knees are closer together under the body. The same explanation is also a factor in the condition of the external condyle in man mentioned above. The inward pull of the extensors, the knees being widely separated, in the horse will also aid the upward extension and prominence of the internal condyle. The existence of complete inward dislocations of the patella in man has been questioned by Malgaigne and denied by Nélaton and Streubel; Hamilton quotes one case of partial luxation reported by Key. Pernaud's case is the only one which I have found in animals, and this was probably only partial. Many of the mechanical points mentioned in the history of dislocation of the patella in the horse apply equally to man's. The non-development of the femoral condyles may explain some of the cases of congenital luxation in man.

DISLOCATIONS OF THE SHOULDER.

Dislocations of the shoulder are rare on account of the absence of the clavicle allowing more mobility of the scapula besides other general reasons. It shows especially well how simple movements affect the liability to dislocation. In man force transmitted up the humerus, as in falling, is not directed to the glenoid cavity but to the side of it, and so the bone is easily dislocated; in the horse the simple movements practically only allow of the direct transmission to the glenoid cavity. The accident mainly occurs in the hunting field, as when landing from a jump with the fore legs thrust forward. The line of the humerus is then about vertical, as it is normally directed backwards, making an angle of 45° with the long axis of the body. In this position the head of the bone may escape in almost any direction. As the tuberosities are very large from the continuous strain on the supraspinatus, &c., the head of the humerus is more likely to escape inwards—i.e., subcoracoid. Still it is to be expected that subspinous dislocations should be relatively more common than in man. The veterinary text-books unanimously state that subcoracoid dislocation is the commonest and do not mention subspinous at all. Dr. Phineas Abraham questioned this and recorded a case of his own and two under the care of Professor Robertson in which post mortem the humeral head was found on the dorsum scapulæ. In the veterinary literature I found records of 4 other cases, but not one of these can be surely put into any class. In man, as is well known, subcoracoid dislocation is frequent whilst subspinous is rare. Dislocation of the shoulder in the horse is almost invariably associated with chipping of the glenoid cavity, probably due to the very large tuberosities of the humerus or the difficulty that the head of the bone has in escaping owing to the simple and not extensive movements allowed. In man for the very reverse reasons the edge of the glenoid cavity is uncommonly chipped. In him also fracture of the humerus with dislocation is more common, and this is especially true of separation of the epiphysis

DISLOCATION OF THE HIP.

I collected three instances dealing with dislocations of the hip in animals. Two were certainly on to the dorsum ilii and one into the obturator foramen; in the others no post-mortem examinations were made as reduction was accomplished. Cattle have a shallower acetabulum and are more liable to this dislocation. From *a priori* reasons it might be expected that dislocations into the sciatic notch should occur more frequently than in man, and with the head of the femur escaping inferiorly thyroid also. In the skeleton the cotyloid notch in the acetabulum of the horse is extremely large and, though spanned by the transverse ligament, might well aid to a greater frequency of thyroid dislocations in them. In conclusion, it may be noted that in looking through the fractures in animals there appears to be a marked absence of cases in which impaction occurs and again of separation of the epiphyses as compared with man.

Bibliography. — Williams: Veterinary Surgery. Müller: Ibid. (Dollar's translation). Peuch-Toussaint: Chirurgie. Leisinger: Dres. Ber., 1872, p. 30. Louchard: Peuch-Toussaint Chirurgie, 2, p. 235. Anderson: THE LANCET, July 2nd, 1892. Pernaud: Veterinary Review, vol. iii., p. 563. Hart: Veterinarian, vol. xlix., pp. 605 and 686. Varnell: Ibid., vol. xxxvii., p. 377. Steel: Quarterly Journal of Veterinary Science of India, I., p. 134. Gabriel: Veterinarian, vol. xxiii., p. 666. Snaith: Journal of Comparative Pathology, vol. vii., p. 279. Spooner: Veterinarian, vol. viii., p. 265. Dubois: Ibid., vol. ix., p. 314. Old Practitioner: Ibid., vol. xii. Golding: Ibid., vol. liv., p. 27. Axe: Ibid., vol. lvi., p. 155. McCall: Ibid., vol. lxv., p. 172. Dollar: Ibid., vol. lxviii., p. 240. Tweedley: Veterinary Journal, vol. xxi., p. 421. Pernaud: Veterinarian, vol. xxxiv., p. 530. Abraham: Veterinary Journal, vol. xix., p. 389. Ringe: Quarterly Journal of Veterinary Science of India, I., p. 247. Smith: Ibid., II., p. 237. Cunningham: Veterinarian, vol. lxx., p. 22. Leisinger: Dres. Ber., 1860, p. 29. Youatt: Horse. Steel: Ox, Dog, Sheep; Veterinarian, Veterinary Transactions and Record, Veterinary Review, Veterinary Examiner, Quarterly Journal of Veterinary Science of India, Veterinary Journal of Pathology, Veterinary Gazette, Veterinary Review and Stockowners' Journal, Journal of Comparative Pathology, and Journal of Comparative Medicine (later volumes only). Poirier: Traité d'Anatomie. Hamilton: Fractures and Dislocations.

SIX CASES OF MALIGNANT DISEASE OF THE CERVIX UTERI TREATED BY VAGINAL HYSTERECTOMY.

BY FREDERICK J. McCANN, M.D., C.M. EDIN., M.R.C.P. LOND.,

PHYSICIAN TO OUT-PATIENTS AT THE SAMARITAN FREE HOSPITAL FOR WOMEN AND CHILDREN, LONDON.

CASE 1.—A married woman, aged fifty-four years, was admitted into the Samaritan Free Hospital on July 13th, 1896. Her previous history was as follows. At the end of February she had noticed a discharge of blood from the vagina. This continued daily until her admission into the hospital. The discharge was never offensive. She did not complain of any pain and was always able to work. For two months previously to her attendance at the hospital the quantity of the discharge had increased. She stated that she was losing flesh. The menopause had occurred seven years previously. She never had any vaginal discharge until the present trouble commenced. She had had five children (twins twice) and two miscarriages. The last child was stillborn. On examination she was found to be fairly well nourished, with no cachexia. Her appetite, she said, was good and she slept well. On bimanual examination the uterus was found to be freely moveable. There was no infiltration of the broad ligaments. A nodular growth was felt, involving chiefly the posterior lip of the cervix and extending upwards into the cervical canal. The appearance of the growth *per speculum* suggested malignant disease, the surface bleeding readily when touched. On July 17th I performed vaginal hysterectomy. The method adopted was that of ligaturing the broad ligaments with silk from below upwards and separating the uterus with scissors after the application of each ligature. The operation occupied 35 minutes. The convalescence was uninterruptedly good, the patient getting up on the fifteenth day and leaving the hospital three weeks after the operation. Sections made from the growth showed that it was a columnar-celled epithelioma. I saw this patient on May 11th, 1898. There was no trace of recurrence.

CASE 2.—A married woman, aged thirty-one years, was admitted into the Samaritan Free Hospital on Dec. 14th, 1896. For a period of five months she had suffered from loss of blood from the vagina after sexual intercourse. During this period also a profuse, foul-smelling discharge had been flowing from the vagina. Her menstrual periods were regular, lasting from three to four days, until five months previously. She had had two children and no miscarriages. The youngest child was six and a half years old. (It may be mentioned

that her husband had a chronic gleet.) On examination she was found to be a stout woman of small stature and of somewhat anæmic appearance. She complained of sacrache and loss of appetite and said that she was gradually losing flesh. On bimanual examination the uterus was found to be directed backwards and freely moveable and the broad ligaments were free from disease. A rounded, punched-out surface was felt on the posterior lip of the cervix which extended into the cervical canal. The edges of the ulcerated area were hard and were composed of a series of nodules and similar nodules formed the floor of the ulcer. These nodules could be seen *per speculum* and also the surface of the ulcer, which was bathed with purulent secretion. On Dec. 17th I performed vaginal hysterectomy, adopting the method already described. A portion of omentum was found adhering to the fundus uteri. This was ligatured and dropped back. In addition the vaginal walls were united with silkworm gut sutures, an orifice being left in the centre through which a strip of iodoform gauze was inserted for drainage. The operation occupied 50 minutes. The convalescence was uninterruptedly good, the patient getting up on Jan. 3rd, 1897, and leaving the hospital five days later. Sections made from the diseased area showed it to be a squamous-celled epithelioma. I have seen this patient recently and there appears to be no trace of recurrence.

CASE 3.—A woman, aged forty-nine years, a widow, was admitted into the Samaritan Free Hospital on May 7th, 1897. Nine months previously, after receiving "an injury to her side," she noticed that she had a blood-stained discharge, which continued until Christmas, 1896, when it became offensive. In January, 1897, a quantity of the growth from the cervix was scraped away and portions were sent to the Clinical Research Association. The scrapings were reported to be sarcomatous. After this operation the discharge ceased for four weeks. I saw the patient in consultation with my friend, Mr. Laird-Cox of Southborough, and on vaginal examination we found a growth of about the size of a billiard ball extending from the margins of the cervix uteri into the vagina. Owing to the size of the growth the posterior relations could not be definitely ascertained. The body of the uterus was enlarged and freely moveable. I advised vaginal hysterectomy. The patient, a stout woman, was very anæmic from loss of blood. She had suffered for some time from a winter cough. She did not complain of any pain until a fortnight before the operation, when she had sacrache. She had not lost flesh. She had been married for thirty years and had been a widow for three years. She had had two children, the youngest child being twenty-nine years of age. The menstrual periods were of the regular twenty-eight-day type and the quantity was moderate. Her father, who is alive, had had a rodent ulcer removed from his face four years before, and his four sisters had died from cancer. I performed vaginal hysterectomy on May 11th. The growth, which in appearance resembled wash-leather, was very friable, a considerable portion of it being scraped away by the fingers. The scraping caused free hæmorrhage, which was arrested by ligaturing the base of the broad ligament on either side. The usual incision was made around the cervix and the bladder was with some difficulty separated anteriorly owing to inflammatory thickening. The posterior vaginal wall was separated, and the peritoneum being exposed was snipped with scissors and the finger was introduced into Douglas's pouch. It was found that several small fibroids were attached to the body of the uterus and that larger fibroids were growing into the broad ligaments. These fibroid outgrowths prevented the uterus being pulled down. As the fibroid growths appeared to be smaller on the left side it was decided to free the uterus on that side by ligature of the broad ligament from below upwards. The anterior peritoneal pouch was opened and the bladder and ureters were carefully separated. When the uterus was freed on the left side it could be pulled down by the vulsellum, thus allowing the right broad ligament to be ligatured from above downwards external to the fibroid outgrowths. There was no bleeding after the uterus was removed. The ovaries were left. The operation occupied one hour and forty minutes. The patient was somewhat collapsed after the operation, but she soon recovered. Sections made from the growth showed it to be a round-celled sarcoma. The patient was able to leave her bed on May 27th and she left the hospital on June 8th. I have recently heard that she continues in good health.

CASE 4.—The patient in this case was a married woman, aged thirty years. For a year and nine months she had noticed a profuse vaginal discharge which was occasionally offensive and blood-stained. This discharge was increasing in amount and was kept in check by injections. There was also pain across the sacrum. The menstrual periods were irregular in quantity, of the twenty-eight-day type, and lasted from four to five days. The quantity of the menstrual discharge, she said, had been less for the previous six months and for twelve months she had been getting thinner. The sacrache had increased, and this together with pain in the left iliac region had interfered with her sleep. She had had three children and one miscarriage. The age of the youngest child was three and a half years. The miscarriage occurred six months after the birth of the last child and was at the third month of pregnancy. There was no family history of malignant disease. On May 15th, 1897, a scraping operation was performed and it was then the opinion of two specialists that the disease was too far advanced for any radical operation. I saw the patient about three weeks later and found her to be a well-nourished woman of medium height, anæmic, and very nervous. On bimanual examination the uterus was found to be freely moveable and the cervix to be excavated by a hard nodular growth which bled easily on touching. The disease had spread to the attachment of the vaginal wall anteriorly, and posteriorly it involved the lip of the cervix. The appearance of the growth had been altered by the previous scraping operation. I recommended vaginal hysterectomy, which was performed in a nursing home on June 3rd. The usual anterior and posterior incisions were made and after partial anterior separation of the bladder and the posterior vaginal wall the bases of the broad ligaments were ligatured to arrest the bleeding from the growth. The further separation of the bladder was continued and the anterior pouch being opened the fundus uteri was drawn outwards by a vulsellum and the broad ligaments were ligatured from above downwards, care being taken to remove as much of each ligament as possible. After cutting away the uterus a diseased portion on the left side still remained. This was clamped by a pair of large Spencer Wells forceps, pulled out, ligatured, and cut off. The pelvis was raised during the operation. The pouch of Douglas was carefully sponged out, and all the ligatures were cut short. The vagina was plugged with iodoform gauze. The operation lasted one hour. The patient left the nursing home three weeks after the operation. Sections of the growth showed it to be a columnar-celled epithelioma. The improvement in the condition of the patient was most marked. She had been subject to menstrual headache, and this completely disappeared after the operation. Her weight, too, increased. On Oct. 11th it was 10 st. 8½ lb.; on Nov. 11th it was 11 st.; on Dec. 11th it was 11 st. 2½ lb.; and on Jan. 10th it was 11 st. 3½ lb. She was, moreover, enabled to lead an active life. On April 8th, 1898, I made a vaginal examination, finding a papillomatous mass on the left extremity of the cicatrix. I recommended that this should be removed, and accordingly on April 16th the operation was performed, the patient being anæsthetised. There was thickening around the scar which was freely moveable, but whether this was malignant or inflammatory I could not ascertain. The patient has been very well since this operation.

CASE 5.—A married woman, aged forty-six years, was admitted into the Samaritan Free Hospital on June 24th, 1897. For six months previously the patient had had a feeling of enlargement of the internal genital organs with bearing-down pains which interfered with her sleep. She also had a profuse offensive brown discharge which was occasionally watery in consistence. There was no hæmorrhage except at the menstrual periods. The menstrual periods were very irregular. Occasionally they occurred every fourteen days, at other times every twenty-eight days, and were very profuse. Previously to the attack the menses had been regular and their duration had been seven days. She also stated that she had been getting thinner. Her mother was alive and was healthy, and her father had died aged seventy-eight years, as she said from "old age." The patient had two brothers and six sisters, all of whom were healthy. She had had 13 children, the last being born on March 29th, 1892, and eighteen months later she had had a miscarriage at her second month. She was found on examination to be fairly well nourished, but she was anæmic. Bimanual examination showed that the uterus was moveable, and the fundus could be felt about 1½ in. above the pubic symphysis. The cervix was nodular and excavated. The growth encroached on the bladder anteriorly and affected the posterior lip of the cervix. On June 28th I performed vaginal hysterectomy. An

incision was made posteriorly and the posterior vaginal wall was separated. Then an anterior incision was made, but as the growth tended to invade the base of the bladder considerable difficulty was experienced in the separation of that organ. The base of the broad ligament on each side was now ligatured, the finger being introduced as a guide into Douglas's pouch. As the uterus was not easily pulled down the upward separation of the bladder was continued and after opening the peritoneal cavity the fundus uteri was pulled out by a vulsellum. By this means the left ovary was pulled into the wound and removed after ligature by the Staffordshire knot. The broad ligaments were now ligatured from above downwards. The right ovary was not removed. Considerable separation of the bladder on the right side was required. Owing to the extension of the disease posteriorly and to the right it was found that the ligature first applied to the right broad ligament was not beyond the disease. Another ligature was accordingly applied externally and the diseased portion cut off. Some vessels required ligature after the removal of the uterus. It should be mentioned that during the operation there was a sudden flow of a quantity of muco-purulent material from the uterine cavity. The vagina was swabbed out with corrosive sublimate solution and packed with iodoform gauze. The operation lasted an hour and twenty minutes. The patient rallied well after it and became rapidly convalescent. She was able to leave her bed on July 10th and was discharged from the hospital on the 21st. I saw her again on Oct. 2nd, when she said she felt much better and her appearance had certainly improved, but she had not gained flesh. She had had some abdominal distension and epigastric pain. The tongue was furred. The bowels acted regularly. On bimanual examination there was found to be hard nodular infiltration of the pelvic cellular tissue which could be felt posteriorly and laterally. There was no discharge or hæmorrhage. On Nov. 27th I saw her with her medical adviser, Mr. Huggins of Islington. Her liver was enlarged and nodular, reaching to the level of the umbilicus. The gall-bladder was distended and acutely painful on pressure. She had constant vomiting, which did not yield to the usual remedies. The vomit was green in colour and accompanied by severe pain in the epigastrium and in the left hypochondrium. On Dec. 9th Mr. Huggins kindly wrote to me intimating that the patient had died, "literally starved to death, never retaining any food." No post-mortem examination was obtained. Microscopic examination of the specimen showed it to be a malignant adenoma of the cervix uteri. The growth was composed of tubules lined with a layer of columnar nucleated epithelium. These tubules were embedded in a matrix of fibrous tissue. In this case there was local occurrence together with the formation of secondary deposits in the liver. The disease was therefore of a very malignant type.

CASE 6.—A widow, aged sixty-one years, was admitted to the Samaritan Free Hospital on Jan. 3rd, 1898. Menstruation, it was said, had occurred twice at the age of twelve years. It then ceased until she was twenty-one years of age. After this age the menses were regular and profuse, of the twenty-eight-day type, and lasting one week. Ten years previously she had had "flooding" which lasted for five weeks. She had had a return of the bleeding twice and finally there was entire cessation of this loss of blood until eight months before her admission into the hospital. For eight months she had had a slight loss of blood from the vagina at intervals of from three to four days. This continued until two months before her admission, when she had what she called a "liver attack," there being afterwards no bleeding for a month. After this the bleeding returned and was more profuse. There was also a slightly offensive discharge, but she complained very little of pain. This pain was in the sacral region and the hypogastrium, corresponding to that experienced at her monthly periods. She had been getting thinner for eight months and her appetite was impaired. She had had four children and no miscarriages. The last child was born twenty-eight years before and she had been a widow for twenty-three years. Her father died at the age of seventy-three years from chronic rheumatism and her mother at the age of seventy-four years from "old age." She has one brother and four sisters alive and healthy. She was seen on examination to be a tall, thin woman, markedly sallow in complexion. She admitted that she took too much alcohol. On bimanual examination a nodular ulcerated surface was felt involving chiefly the posterior lip of the cervix and extending to and involving the posterior vaginal wall. The uterus was moveable and was not enlarged. On Jan. 8th, 1898, I performed vaginal hysterectomy. The posterior incision was prolonged downwards along the posterior-vaginal wall in order to excise the disease which had spread in that direction. There was some difficulty in separating the bladder. The broad ligaments were secured, three ligatures being used on each side. The uterus was removed and the vagina was packed with iodoform gauze. The patient made an excellent recovery. She got up on Jan. 24th and left the hospital on Feb. 2nd. Microscopic examination showed the disease to be a columnar-celled carcinoma. This patient has remained well.

Remarks.—These cases illustrate the varieties of malignant disease met with in the neck of the womb. In four of the cases the malignant disease was discovered at a comparatively early stage, thus making the ultimate progress much more favourable. It is difficult, and in many cases impossible, to state the exact duration of the disease. Most cases have at first no symptoms at all or the symptoms are so slight as to attract little attention. The sufferers, therefore, do not seek advice till the disease is far advanced. There is no way of making sure of the beginning even if we were constantly examining, though microscopical examination of excised portions may lead to the detection of the earliest stage. Statements as to the duration of the disease are to some extent mere guesses, for there is no ground for fixing its time of beginning and the earliest data attainable are only indications of disease already considerably advanced. The earliest and most frequent sign of malignant disease is the hæmorrhage. This may occur, as in Case 2, after sexual intercourse or it may be evidenced by increased bleeding at the menstrual periods. Loss of blood between the periods is common. When the discharge from the vagina has become foul, the smell will indicate that sloughing of the diseased surface has commenced and it is therefore a later sign. Pain is a late symptom of cancerous disease, yet it is all-important to the patient, for unless pain exists many patients do not seek advice and hence the reason why cases are so frequently discovered where the disease cannot be removed. When pain exists of a severe character, interfering with sleep and requiring narcotics for its relief, the disease will be found to have spread to the pelvic cellular tissue and peritoneum. It may be taken as proved (1) that the commonest age for uterine cancer is between forty and sixty years and (2) that it more frequently affects the lower ranks of society. Every patient who has had a loss of blood from the vagina after the cessation of the menstrual periods should be carefully examined, as this hæmorrhage may be the initial sign of malignant disease. Further, enlargement of the uterus after the menopause should always give rise to suspicion. It is supposed that the uterus becomes gradually smaller when its activity has ceased. This is true to a certain extent but in many women the process of involution is extremely slow, and when a large uterus is found where the menstrual flow has ceased the patient should be kept under strict observation. It is the exception to find cancer affecting the neck of the womb, where that organ is well involuted after the menopause. For the present we must collect the facts which clinical investigation furnishes, for as to the causation of cancer much has been written but little is really known. It may yet be proved to be a parasitic disease. I am a firm believer in the importance of gonorrhœal infection as a predisposing cause of cancer of the cervix, more especially where that infection leads to a chronic cervical gleet. Lacerations of the cervix are important not because they are the future seat of malignant degeneration, but because they are accompanied by thickening and enlargement of the cervix and body of the uterus from the absorption of septic products and thus predispose the tissue to malignant degeneration. Indeed, the septic subinvoluted uterus pouring forth a copious discharge from its cavity, so frequently found after abortion or full-time labour, especially among the poorer classes, is a most important factor in the causation of cancer.

In conclusion I must add one word of warning as to scraping the diseased surface. Such an operation in the early stages will only increase the growth and do more harm than good. As soon as the disease is diagnosed the proper treatment is early and complete removal. I always recommend total extirpation of the uterus because this allows the broad ligaments to be removed close to the pelvic walls. If this is not done I fail to see the advantage possessed by this operation over that of supra-vaginal amputation.

Curzon-street, W.

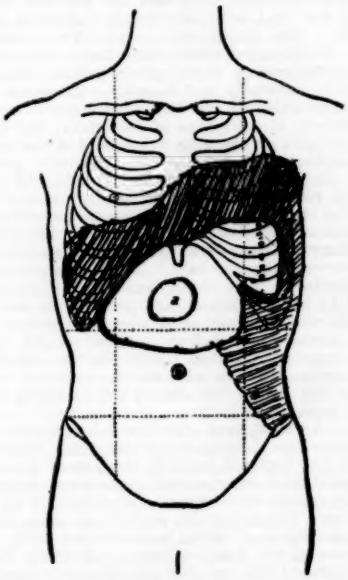
A CASE OF CANCER OF THE PYLORUS PRESENTING SOME UNUSUAL FEATURES.

BY J. MICHELL CLARKE, M.A., M.D. CANTAB., F.R.C.P. LOND.,

PHYSICIAN TO THE GENERAL HOSPITAL AND PROFESSOR OF PATHOLOGY, UNIVERSITY COLLEGE, BRISTOL.

THE patient was a man, aged sixty-one years, who had worked for fifty years as a miner. The family history was unimportant and he had had no previous illness with the exception of being bruised by falling stones and of being burnt some years ago. He came to the hospital on May 22nd, 1894, and stated that the present illness began one week after Christmas quite suddenly with "cramp in the bowels." This shortly afterwards left him and except for an occasional twinge of pain in the abdomen he remained well until a month previously, when the pain again came on suddenly and was attended with swelling of the bowels; the pain was now more severe than before and was aggravated by food. He had been sick once only, on May 13th, after a cup of tea. The onset a month previously was attended with diarrhœa and abdominal tenderness and the diarrhœa returned again for one day a week previously to admission. The pain was excruciating, paroxysmal, and "doubled him up." There had never been hæmatemesis, melæna or hæmaturia, nor, so far as he knew, fever. He had not had jaundice. He could not account for the illness but had wanted sufficient food lately and had suffered much exposure. His appetite was lost; the bowels were regular. The pulse was regular but weak and empty between the beats. The arteries were thickened and tortuous. The respirations were 30. His sleep was disturbed by pain. The temperature was normal. The tongue was large, flabby, and coated with a moist brown fur. During the month he had been able to take very little food and had lost flesh. He was anæmic and emaciated and had an anxious expression. What at once attracted my attention when he walked into the out-patient room was a very large and localised swelling of the epigastrium which was quite evident through his clothes. On examination there were signs of pulmonary emphysema, the chest being barrel-shaped and hyper-resonant in front, and the cardiac dulness was obscured by the lung; the lower ribs on the left side were remarkably bulged out by the epigastric swelling. The heart dulness began above at the third space and ended below at the upper border of the fifth rib, where the percussion note became tympanitic. The cardiac impulse was at the sternal end of the third left intercostal space. Posteriorly, dulness on the left side began at the seventh rib and the lower angle of the scapula, and the breath sounds and the vocal resonance were absent over this area. Air entered the upper part of both lungs freely; the breath sounds were generally harsh over the whole of the right lung. Liver dulness extended 4½ in. in the nipple line; from the fifth rib to the lower costal margin its lower edge could not be felt; the liver dulness ended abruptly in the middle line at the right border of the tympanitic swelling. The epigastric and upper part of the umbilical regions of the abdomen were greatly distended and the flanks and the lower part of the abdomen were hardly distended at all. There was a tympanitic percussion note over the swelling extending upwards to the junction of the ensiform cartilage with the sternum in the middle line to the fifth rib in the parasternal line and to the left as far as the anterior axillary line at the level of the seventh rib; to the right it extended as far as the line joining the nipple with the middle of Poupart's ligament on the right side. Midway between the umbilicus and the ensiform cartilage the abdomen measured 35½ in.; and at the umbilicus it measured 31 in. There was dulness in the left flank; elsewhere the abdomen was resonant. The superficial abdominal veins were greatly distended. Over a small area at the end of the eleventh rib on the left side a tympanitic percussion note was obtained. No change was observed in the shape of the tumour when the patient sat up or in the area of dulness in the left flank. Nothing could be felt over the epigastrium owing to the extreme distension and no tumour could be made out in any other part of the abdomen. The urine was normal; the feet were bluish in colour but there was no œdema. The patient was unable to lie on his right side. On the 23rd the area of tympanitic resonance extended higher on the chest—i.e., as far as the fourth rib; there seemed to be more marked bulging of the ribs in the left hypochondrium; the area of tympanitic resonance at the tip of the eleventh rib had disappeared. Puncture with an exploring syringe in the left eighth intercostal space merely withdrew a little sanguineous fluid. On the 24th the left side of the chest was more bulged and was dull all over at the back, the heart beat to the right of the sternum in the third space, and the mediastinum was pushed over to the right. Two pints of sero-purulent fluid of peculiar opalescent appearance were removed by aspiration; this opalescence was perhaps due to the presence in it of a very large number of leucocytes which were crammed with fat-droplets as if they were undergoing fatty degeneration. Next morning the patient breathed more easily, was in less pain, and felt better. The abdominal swelling remained unchanged. On the 26th it was noted that the right side of the chest moved more freely than the left and that the cardiac impulse was in the third left intercostal space close to the sternum, but could also be indistinctly felt to the right of the sternum. The cardiac area began above at the third rib and ended below at the fifth. The bulging of the lower ribs on the left side and of the epigastrium was the same. The areas of dulness and tympanitic resonance are shown in Fig. 1. The transition from one to the other was quite abrupt except over the lower limit of the epigastric swelling, where it was ill-defined, the right side and the lower parts of the abdomen having now become more distended and yielding also a high-pitched tympanitic note on percussion. Over a circular area in the epigastrium a metallic tinkle was heard and the bell-sound was fairly distinctly obtained. In the sitting posture the areas of tympanitic resonance were unaltered except that dulness extended ½ in. higher over the left false ribs and a line of dulness 1 in. in breadth appeared along the lower border of the epigastric swelling just above the umbilicus. When he lay on his right side the left margin of tympanitic resonance in the chest was encroached upon for about 1 in.—i.e., moved 1 in. to the right. On the left side of the chest in front there were dulness, absence of breath-sounds and of vocal resonance below the

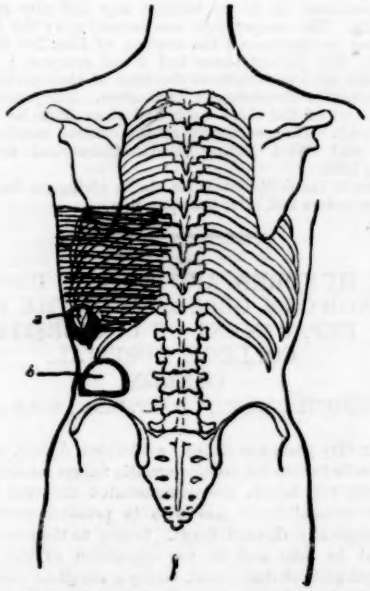
FIG. 1.



The shaded areas were dull. The circle marked *a* defines the area over which a bell-sound was obtained. The thick black line marks the outline of the stomach. The dotted line marks the shifting of the limits of dulness when the patient lay on his right side.

third rib (above this the note over the chest was somewhat tympanitic) and posteriorly below the fifth rib. The dulness in the left loin had now increased and a fluid thrill could be obtained between the loin and the epigastric swelling. When lying on his right side the anterior edge of the dulness in the loin shifted 3 in. further back and an area of tympanitic resonance of the size of a five-shilling piece appeared over the end of the tenth rib. Later in the same day this disappeared and a fresh tympanitic area appeared just above the middle of the right iliac crest behind (Fig. 2.)

FIG. 2.



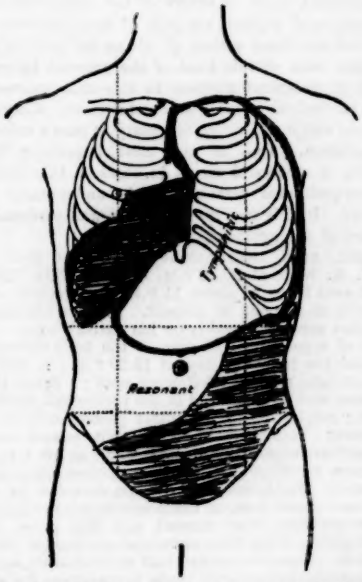
The shaded area was dull. Over the areas marked *a* and *b* a tympanitic percussion note was obtained.

The temperature was normal. On the 28th the left side of the chest was found to be full of fluid, which consisted of thin pus, and the temperature had risen to 100·6° F. After consultation with my surgical colleagues it was decided not to open the abdomen but to evacuate the pus in the left pleural cavity by a free incision. This was done and three pints of thin pus were removed. The next day the wound was discharging freely; the temperature was 102°, the pulse was 96, feeble, with a tendency to dicrotism, and the respirations were 28 to the minute and laboured. There were all the signs of pneumothorax over the left side of the chest. The epigastric swelling had slightly decreased, the abdomen being at this part 32½ in. in circumference. The tympanitic resonance here was continuous with that over the left side of the chest (Fig. 3). There was dulness, shifting with the position of the patient, over the whole of the left side and the lower part of the abdomen. On the 30th the patient was very much worse, there was general abdominal tenderness, and the dulness over the lower part of the abdomen extended to a point 1 in. above the umbilicus. The signs were otherwise unchanged. The respiration was very difficult, at times gasping, the pulse was very weak, and he was obviously failing fast. He gradually sank and died on June 1st. After May 28th his condition was such as not to admit of any attempt at operative interference.

Necropsy.—At the post-mortem examination, twelve hours after death, the tympanitic areas on the chest and the abdomen were observed to be the same as during life. The left pleural cavity was full of air but contained no fluid. The stomach was very greatly distended but lay upwards and to the left, occupying the left epigastric region, its lower edge being at the level of the lower border of this region; it extended under the left lower ribs, pushing up the diaphragm to the level of the fourth rib in the nipple and anterior axillary lines. The tympanitic area was due entirely to the stomach and distended transverse colon which lay immediately below it. The heart was pushed over to the right. The pericardium was normal. The right lung was normal; the left was collapsed with the exception of the apex; its lower lobe was carnified. There was slight general peritonitis; the abdominal cavity contained about two pints of turbid fluid. With regard to the stomach, at the pylorus there was a firm mass of scirrhous cancer completely surrounding it, which where largest was about 1½ in. thick. There was no ulceration but here and there under the mucous membrane were some minute hæmorrhagic extravasations. A mass of hard, pale white retro-peritoneal glands, infiltrated with cancer, lay behind the stomach and just above and around the pancreas; this mass appeared to have prevented the descent of the dilated stomach. The pancreas was not involved. No perforation was anywhere found. Secondary cancerous deposits were numerous in the liver, but none could be seen in the left pleura or on the peritoneum. The other organs were healthy.

Remarks.—The case presented at the time considerable difficulty in diagnosis. The great distension of the epigastrium effectually prevented the palpation of the tumour. In obstruction at the pylorus from malignant disease the greatest degree of dilatation of the stomach is met with. As a rule the dilated stomach passes downwards and is not rarely so much distended that its lower border reaches to the pubes. In this case the stomach passed upwards and to the left and was at the same time pushed forwards by the mass of new growth behind it, hence the great protrusion of the epigastrium and the pushing up of the heart. It will be noticed

FIG. 3.



The shaded areas were dull. Over the area included within the thick black line there was a tympanitic percussion note.

that the area of stomach resonance took, roughly, an hour-glass form and that the lower border of the part behind the left ribs did not extend lower than the upper border of the eighth costal cartilage. Doubtless this portion of the tympanitic area was modified in shape by the presence of fluid in the left pleural cavity. The physical signs thus somewhat resembled those produced by a collection of gas and pus beneath the diaphragm. In both affections the lower part of the normal cardiac dulness becomes tympanitic; in the case just related this was due to the pushing up of the diaphragm by the distended stomach. As a subphrenic pyopneumothorax lies above the left lobe of the liver and pushes it downwards, whilst a distended stomach pushes it upwards, the determination by percussion of the position of this lobe should be of diagnostic importance, but in practice the dulness due to the left lobe is replaced by the tympanitic

note of the stomach or gas-containing abscess cavity. The fact that the area of tympanitic resonance extended so far to the right was certainly in favour of a distended stomach, but at the time, when viewing the whole features of the case, this did not come out so prominently as on after consideration. Dr. Ewart[1] lays stress on the occurrence in subphrenic pneumothorax of an irregular area of tympanitic resonance at the left base of the thorax posteriorly, whilst a distended stomach has a definite convex outline to the left and does not pass into the back. In my case, however, the small area of tympanites beyond the stomach to the left over the tenth and and the eleventh ribs was difficult to account for. Unless, as above suggested, it was due to the mass of new growth behind the stomach no satisfactory reason was found post mortem to explain why the dilated viscus did not descend into the abdomen in the usual way. Lastly, the making of a free opening into the left pleura was undoubtedly a mistake and by causing pneumothorax hastened the fatal termination.

Clifton, Bristol.

CASE OF INTRA-PERITONEAL RUPTURE OF THE URINARY BLADDER; ABDOMINAL SECTION; SUTURE; RECOVERY.

BY H. LITTLEWOOD, F.R.C.S. ENG.,
SURGEON TO THE GENERAL INFIRMARY, LEEDS.

SUCCESSFUL cases of suture of the urinary bladder after intra-peritoneal rupture are still of rare occurrence; their rarity and the direct saving of life as the result of an operation make cases of this kind of the greatest interest. The method of treatment adopted in this case was very similar to that carried out in other successful cases. Catgut sutures were used and it was never necessary to pass a catheter after the operation. One of the most important factors in obtaining a successful result in cases of this kind and in all intra-peritoneal catastrophes is undoubtedly an early diagnosis. In this case the operation was performed within 36 hours of the accident.

A man, aged twenty-eight years, was first seen by Mr. W. A. Stott at 10.30 P.M. on Nov. 28th, 1897. The patient went home at about 11 P.M. the previous night and could give no account of himself. He was intoxicated and his clothes were very muddy on his arrival home. He complained of a good deal of pain in the body throughout the night and the following day, at 10.30 P.M., he was seen by Mr. Stott, who made the following note: "Some abdominal tenderness and signs of fluid in the peritoneal cavity. Pulse 88, soft; respiration 18. Catheter passed and 2 oz. of urine withdrawn. Patient says he has not passed urine since the previous night." The next day, at 10 A.M., he was again seen by Mr. Stott. There was then some abdominal tenderness. Fluid could easily be detected in the peritoneal cavity and 1 oz. of urine was withdrawn by catheter; the temperature was normal and the pulse was 100. The diagnosis of an intra-peritoneal rupture of the bladder was made. I saw the patient half an hour later, agreed with the diagnosis, and at once made preparations for abdominal section. The operation was commenced about 11 A.M. Mr. J. Nicholson gave ether and Mr. Stott and one of my dressers—Mr. A. Spong—assisted me at the operation.

Operation.—An incision about 3 in. long was made in the middle line just above the symphysis pubis. On opening the peritoneal cavity a large quantity of fluid was found. It was a little turbid and obviously urine. The quantity was not measured, but estimated between 3 and 4 pints. This was rapidly emptied by means of sponges. Some coils of bowel which were seen were inflamed and between some of the coils there were present some flakes of purulent lymph. The rent in the bladder was soon found; it was in the middle line, about 1½ in. in length, and terminated just at the peritoneal reflexion from the top of the bladder. The opening was now easily brought near the surface and closed by means of eight or ten catgut sutures No. 0, by Lembert's method, including all the vesical coats with the exception of the mucous membrane. The vesical wall was thick and appeared quite healthy. It was not thought necessary to test the stitches by distending the bladder. The peritoneum was then carefully sponged, a Bantock's tube was placed in the pelvis, and the abdominal wound was closed. The operation lasted about one hour and the patient did not appear at all collapsed after it.

As to the after treatment, Bantock's tube was emptied frequently during the first twenty-four hours, the quantity of fluid rapidly diminishing, and it was removed at the end of the first forty-eight hours. It was never necessary to use a catheter, as the patient passed urine within six hours of the operation and continued to do so without any difficulty at regular intervals. The temperature was normal after the operation with one exception—on the evening of Dec. 3rd it reached 99·6° F. The patient never had a bad symptom; although there was some peritonitis at the time of the operation there was no further development of it after. The patient got up at the end of the third week and since then he has been quite well. He was shown at the clinical meeting of the Leeds and West Riding Medico-Chirurgical Society in March, 1898.

I have to thank Mr. Stott for kindly giving me the notes of the case before and after the operation.

Leeds.

[1] Clinical Journal, July 25th, 1894.

ONE HUNDRED AND THIRTY CASES OF RINGWORM OBSERVED IN THE SKIN DEPARTMENT OF UNIVERSITY COLLEGE HOSPITAL, LONDON.

BY GEORGE PERNET, L.R.C.P. LOND., M.R.C.S. ENG.

SOME fifty years ago Grüby,[1] a Viennese doctor, settled in Paris, called attention to the parasitic nature of ringworm of the scalp and beard, and demonstrated the fact that the various clinical forms met with in practice were due to microscopically distinct fungi. Owing to the nomenclature adopted by him and to the opposition of the Parisian dermatologists of that period, Grüby's excellent observations appear to have been practically completely forgotten until Sabouraud[2] (1892 and onwards) published the results of his exhaustive investigations, which have been the starting point of so much work in this and other countries. It is not necessary here to once more go over the ground covered by previous English writers on the subject in the light of recent research. For full details the reader is referred to their publications.[3] Shortly, the present views with regard to the fungi causing ringworm are that they are divided into a small-spored (microsporon Audouini) and a large-spored (trichophyton megalosporon) form. The latter is further subdivided into two classes depending on the situation of the fungus inside (endothrix) or outside (ectothrix) the hair. To these an endo-ectothrix form is added by some. The main object of the investigation undertaken in the Skin Department of University College Hospital was to ascertain whether these researches were of any practical value as far as treatment and prognosis were concerned. The method pursued was to note the clinical appearances and there and then microscopically examine diseased hairs, stumps, and scales in liquor potassæ B.P. (i.e., about 6 per cent.). In this paper I propose to give a succinct account of the results

[1] Grüby: Comptes rendus de l'Académie des Sciences, Paris, 1842, tome xv., p. 512; 1843, tome xvii., p. 301; 1844, tome xviii., p. 583. (The paper published in 1841 referred to favus. Grüby's papers on ringworm fungi are in abstract only.)

[2] Sabouraud: Various papers on the subject from 1892 to the present time. See especially his beautiful monograph "Les Trichophyties Humaines" (Paris, 1894), with an atlas of plates.

[3] Adamson: Observations on the Parasites of Ringworm, British Journal of Dermatology, vol. vii., 1895, pp. 201 and 237, with plates. Colcott Fox and Blaxall: An Inquiry into the Plurality of Fungi causing Ringworm in Human Beings as met with in London; ibid., vol. viii., 1896, pp. 242, 291, 337, and 378 (an exhaustive inquiry with numerous plates). Also in book form (Lewis, London). Aldersmith: Ringworm and Alopecia Areata, fourth edition, with plates and illustrations (Lewis, London, 1897). Malcolm Morris: Ringworm in the Light of Recent Research, with numerous plates (Cassell, London, 1896). See also Thin: Pathology and Treatment of Ringworm (London, 1887); and Leslie Roberts: Introduction to the Mould Fungi, parasitic on Man (Liverpool, 1893). For historical details see also Feulard: Teignes et Teigneux (Paris, 1886).

of the inquiry, which extended from October, 1896, to May of the present year. It must be understood that they apply to ringworm as observed in the practice of a London hospital.

The 130 cases under discussion were distributed as follows:—

	Small-spored (i.e., microsporon Audouini).	Large-spored (i.e., trichophyton megalosporon).	Totals.
Tinea tonsurans	78	2	80
Tinea tonsurans associated with tinea circinata	18	2	20
Kerion of scalp	—	2	2
Tinea circinata	11	11	22
Tinea circinata (involving the scalp)	3	—	3
Tinea sycosis	—	3	3
			130

Of the 100 cases of tinea tonsurans and tinea tonsurans associated with tinea circinata, the microsporon Audouini was present in 96 and the trichophyton megalosporon in 4—that is, 24 to 1. These proportions are, of course, approximate only, as they must necessarily vary within limits. Moreover, the 100 cases recorded did not represent all the cases attending the department during the period mentioned; for various reasons some few patients escaped examination. They may, however, be taken as fairly consecutive. These figures, agreeing on the whole with those of other London observers, show that the very great majority of our cases of ringworm of the scalp are caused by the small-spored fungus. With regard to the sex of the microsporon patients, the males were to the females practically in the proportion of 2 to 1. As the greater number of the children were of school-age, this difference in the incidence of the disease may be accounted for by the rougher play of boys, the more frequent interchange of head-gear among them, and the fact, too, that they wear the hair short. The oldest child was twelve years of age. In about a fifth of the cases of tinea tonsurans due to the small-spored fungus, tinea circinata lesions of the body were also present. The 4 cases of large-spored tinea tonsurans were distributed as follows: two boys, both aged thirteen years, and two girls, aged seven and eight years respectively. In the two girls tinea circinata of the body was also present; one of these patients really first came to the department in 1894; her out-patient's letter was renewed in 1897 as the disease was still uncured. The large-spored trichophyton was also found in the two cases of kerion. Both the patients were girls, aged five and eleven years respectively. As to the cases of simple tinea circinata they were practically evenly distributed among the small and the large-spored fungi. One adult, a woman, aged thirty-two years, exhibited the microsporon Audouini (*vide infra*), and three adults (two women, aged thirty and forty-two years respectively, and one man, aged fifty years) the trichophyton megalosporon. I have placed three cases of tinea circinata in a separate division. They will be referred to under microsporon Audouini. The three cases of ringworm of the beard (tinea sycosis) in which fungus was found belonged to the large-spored group.

MICROSPORON AUDOUINI: TINEA TONSURANS, INCLUDING THE CASES IN WHICH TINEA CIRCINATA WAS ALSO PRESENT.

Clinical.—In the untreated cases the diseased areas were circular, more or less scaly, sometimes densely so, dry, with bent, broken, twisted hairs from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch in length growing usually in various directions. Exceptionally the short diseased hairs were quite straight, in one instance going off to a point, like an inverted note of exclamation, whilst others in the same patch were bent at an obtuse angle. The diseased hairs were usually whitish, opaque, with a powdery sheath about their base. This sheath was well marked in a case with a history of three years' duration. In an early case (a boy aged five years with two patches noticed one week) there was scaliness only, but no powdery spore-sheath at the base of the characteristic bent and broken hairs. As a rule the patches were multiple, well-defined, and not inflamed, but slightly reddened only. Many deviations from the type were observed, either as a result of long duration, or previous treatment, &c. In a boy aged six years with multiple patches of twelve months' duration the diseased hairs were whitish, dull, and curled up like wool. In previously treated cases the powdery spore-sheath was often absent. Rarely small bald areas were noticed; in other cases, again, the disease involved nearly the whole of the scalp. One of the latter looked very much like eczema seborrhoicum when first seen. Where tinea circinata was associated with tinea tonsurans the parts affected were usually the face and neck, more rarely the trunk and upper limbs. The patches were sometimes numerous, as in the case of a boy, aged nine years, with tinea tonsurans of the right parieto-occipital region, who had two small scaly patches on the forehead and about a dozen small, pale, fawn-coloured lesions with slight scaly borders about the body. In another, a girl, aged six years, with well-marked, densely scaly patches on the occiput, there were upwards of a score of circinate lesions scattered about the arms and the back of the neck. The majority of these were from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. in diameter, well defined, but solid; the others were in distinct rings, the largest fully 1 in. in diameter.

Microscopical.—It is important in all cases always to select diseased hairs or stumps. These should be placed on a slide with a drop of liquor potassæ B.P., and the cover-slip gently applied. Where ointments or oily applications have been used it is advisable to first get rid of the fat by placing the specimens in a little ether. (These remarks apply to the large-spored cases as well.) The characteristic feature of the small-spored fungus was the sheath of spores which surrounded the hair for some distance. This spore-sheath extended upwards beyond the intra-follicular portion of the hair. The spores were closely aggregated and fairly equal in size. They were not arranged in any special order, and in this differed from the endo-mycelial spores of the trichophyton megalosporon. They were units crowded together, in this way giving rise to a mosaic appearance. Detached single spores, and spores in twos, threes, and in clumps were seen away from the hair, especially when the coverslip was gently pressed down on the preparation. They were then seen to be round. After a time the spore-sheath having been loosened and the spores scattered, the delicate non-sporulated mycelium could be seen within the hair running more or less parallel with it. Where the root-sheath, or part of it, came away with the hair, which was not often the case, the spore-sheath was seen to be situated between the inner root-sheath and the hair itself. The large ghost-like elements mentioned by Adamson[4] were once noted, but the abundant segmented and sporulated mycelium observed by Fox and Blaxall[5] was never seen. A terminal fringe of mycelial threads towards the root-end was sometimes observed, and was probably due to the intra-pilar mycelium being torn away from the portion of hair left in the follicle. In very early patches of tinea tonsurans mycelium was found in the epidermal scales before the hairs were affected. In one instance abundant branched, granular mycelium (for description of the mycelium see tinea circinata *infra*) was present in the scales detached with hairs removed from a patch two days old. In the case of one of the hairs there were numerous spores for some distance up and outside the broken proximal end. In another, a couple of mycelial threads were seen penetrating it at the root-end nearly at right angles to the cross section.

TINEA CIRCINATA.

Clinical.—The lesions due to the small-spored fungus were either small, insignificant, pale scurfy patches, or distinct rings. One or two examples of the latter will be sufficient in this place. In a girl, aged seven years, there was a patch under the left jaw forming a distinct ring with nearly clear centre; she had a similar lesion near the umbilicus. (Her brother, aged three years, seen on the same day, had small-spored ringworm of the scalp.) A woman, aged thirty-two years, who had been bringing her child, aged five and a half years, for diffuse microsporon tinea tonsurans, developed three well-defined circular patches on the flexor surface of the left forearm. They commenced as small irritating pimples which enlarged and spread peripherally. The rings had a raised scaly border and showed signs of slight inflammation. The central portions were depressed and in the case of the two larger patches (nearly half an inch in diameter) scaly. Abundant mycelium of the small-spored kind was found in the scrapings. In three cases in which characteristic small-spored tinea tonsurans was also present some of the circinate lesions exhibited two concentric rings, one within the other. In infants ringworm of the scalp leads, as is well known, to circinate lesions and these may be due to microsporon Audouini. This appearance was also

[4] Adamson: Loc. cit., p. 210.

[5] Colcott Fox and Blaxall. (British Journal of Dermatology. Loc. cit., plate II., fig. 4).

noted in a boy, aged seven years, who had a distinct ring on the left temple. It was about 2½ in. in diameter, with a slightly red margin, extending quite back into the hairy scalp, the anterior portion alone being on the free skin. There was abundant typical mycelium in the scrapings; myoelium was also present inside one of the broken, bent scalp hairs, but there were no spores outside it. The patient had been using oleate of copper ointment for ten days.

Microscopical.—Microsporon Andouïni in ringworm of the glabrous parts was present as coarse and irregularly branching mycelium, varying slightly in diameter and greatly in length and shape. The branching usually occurred laterally at right angles to the main filament and the branches were rounded in a sphercidal manner at their free end. (Morphologically, there are some points of resemblance between some of the mycelial elements of achorion Schönleinii (favus), microsporun furfur (tinea versicolor), and microsporon Audouïni as they occur in the human skin.) Further, the mycelium of small-spored ringworm exhibited small refractile dots here and there, which gave it a granular appearance, but it was not sporulated and was usually unsegmented.

TRICHOPHYTON MEGALOSPORON: TINEA TONSURANS.

Clinical.—As already stated, four cases only came under observation. The clinical appearances were much less uniform than in the case of the small-spored fungus. The patches were not so well defined and appeared to develop more slowly. As a rule they were smaller, varied more in shape, and were but slightly scaly. The stumps were few and far between and required careful looking for. They were, as a rule, broken off short very near or at the level of the scalp, in the latter case presenting the appearance of black dots. They did not exhibit a powdery sheath. The following descriptions from the notes made at the time may be referred to here.

CASE 1.—The patient was a boy, aged thirteen years. The duration of the disease was three months. Several small patches were scattered about the scalp. One in the occipital region was elongated, oval, and almost smooth. 2 in. higher up there was a ¼ in. scaly patch with a single stump covered by epithelial scales and broken off level with the scalp. In the left posterior parietal region there was a ¼ in. totally bare patch. The original patch on the left parietal was about 1¼ in. by 1 in. and ill defined; the stumps were very short, almost level with the skin, and very few in number. On the remaining parts the healthy hair was scanty.

CASE 2.—The patient was a boy, aged thirteen years. The duration of the disease was said to be 14 days (the fact is, the patient, who was dirty and neglected, did not know). There had been no previous treatment. The scalp on the left side, in the posterior half, was to a considerable extent bald. The denudation was incomplete and at the borders was distinctly patchy. Some outlying patches were from ¼ in. to ½ in. in diameter. The bald area exhibited here and there a certain amount of ill-nourished but not markedly diseased hair. On the parts which were almost bald there were a few black dots scattered about. There were stumps broken off short, very slightly if at all elevated above the level of the skin, and when removed they were about $\frac{1}{16}$ in. long. A few projected $\frac{1}{16}$ in. or more above the surface, but generally broke off when an attempt at epilation was made; a few other hairs were removed and were ¼ in. long and slightly curved. Several of the patches were reddened and very slightly crusted, like a subsiding kerion. There were also several bald areas about the scalp, slightly scaly and ill defined. In many of these no stumps could be seen.

Microscopical.—The characteristic feature of the trichophyton was the sporulated and segmented mycelium, or, in other words, the arrangement of the spores in chains. The spores were usually larger than those of microsporon Audouïni, but there was much variation in this respect. In Case 2 (*vide supra*) there were numerous spores forming a sheath round a stump; many were not larger than the spores of microsporon. There was sporulated mycelium inside the hair. Another stump had a few spores external to it. At the broken root-end and in the hair there were chains of spores, the latter varying very much in size, some being very large; higher up the mycelium was not so markedly sporulated; some, indeed, was not sporulated at all. This appearance led me to conclude that the fungus belonged to the ectothrix group, although there was mycelium in the stumps themselves.[6] The chains of spores, whether inside (endothrix) or outside (ectothrix), were arranged more or less longitudinally to the diseased hair and the individual spores were more or less square in shape. Where the mycelium was fragile the scattered spores were more oval and rounded. Of the four cases Cases 1 and 2 above described were apparently ectothrix (neither of these was associated with tinea circinata) and the other two were apparently endo-ectothrix (both had in addition tinea circinata patches).

KERION.

Microscopical.—Two cases only of kerion of the scalp were seen. The patients were girls, aged eleven and five years respectively, and in both large-spored fungus was present. In the latter case the segmented and sporulated myoelium were distinctly ectothrix, but in the former it was apparently confined to the internal portions of the diseased stumps examined.

TINEA CIRCINATA.

Clinical.—Usually the patients exhibited distinct rings with well-marked, raised, red scaly borders. The appearances varied from case to case, especially in the adults. A woman, aged thirty years, had a well-defined patch on the back of one hand. It was slightly papular at the border and somewhat depressed and scaly in the centre. She complained that the back of the hand swelled two or three times a day and became red. When the borders were scraped for examination there was a little serous exudation. Another woman, aged forty-three years, came with a patch 4 in. in diameter on the left forearm. It was papular and papulo-vesicular at the periphery, with here and there small sero-pustular lesions. A man, aged fifty years, had a patch over the knuckles and back of the left hand. The greater part was only reddened, but there were slight excoriation and crusting at the periphery.

Microscopical.—The large-spored fungus in tinea circinata was present in the form of jointed, long, usually straight, dichotomously branching mycelium, which was sometimes sporulated here and there. The segments varied in length, being shorter the nearer they were to the sporulation stage. The width also varied, the filaments being at times very slender. In the case of a male child, aged two years, with tinea circinata of the left cheek, sporulated mycelium was lying curled up in the centre of flattened epithelium cells, arranged in irregularly concentric layers around it; this portion of the preparation was dark in contrast to the clear surrounding epithelium, even after half an hour's soaking in liquor potassæ. In the case of the woman aged thirty years the mycelium appeared to be attenuated, but it was distinctly divided into equal fairly long segments. On the other hand, in the woman aged forty-two years, where there was marked inflammation, the joints of the mycelium were short and thick (sporulation).

TINEA SYCOSIS.

It is not necessary in this place to give a clinical description of the above well-known condition.

Microscopical.—The fungus was not always easy to find and more than one examination of many hairs was sometimes necessary. In the three cases where the search was successful the trichophyton was apparently of the ectothrix kind. Sporulation of the mycelium was the rule, the segments being short and thick.

ETIOLOGY.

Microsporon Audouïni.—In the case of small-spored tinea tonsurans it was usually stated to have been contracted at school or from other children of the same family or in the same house. In several instances the mothers were of opinion the disease had been caught at fever hospitals where the children had been patients (for scarlet fever, &c.). As this may be the fact—in some cases at least—it would be as well in those institutions to keep children suffering from ringworm apart from the others and to avoid the use of the same combs and brushes. No case could be successfully traced to animals.

Trichophyton megalosporon.—Attempts to trace the disease to animals were also unsuccessful. One of the patients suffering from tinea sycosis was a groom, who stated that some of the horses under his care had suffered from ringworm, but the animals could not be seen. In another case of tinea sycosis, the patient stated that his two birds (a canary and a

[6] Colcott Fox and Blaxall: British Journal of Dermatology, loc. cit., p. 296, et seq.

linnet) were losing their feathers apart from moulting, but no fungus could be found in the feathers subsequently brought to the department. The barber's brush was most likely the *fons et origo mali* in all three cases. In several of the large-spored cases of tinea tonsurans and tinea circinata in children the father was a cabman or a carman; some lived over stables. But this also applied to cases which were distinctly small-spored in character. Moreover, microsporon fungi in the horse and dog have been described. Ringworm in animals is apparently rare in London. Horses are better cared for in London than in Paris; this may perhaps account for the greater proportion of the large-spored cases in Sabouraud's statistics, assuming that their animal origin be correct.

TREATMENT AND PROGNOSIS.

The differential diagnosis of the large and small-spored fungi does not help us much in London. In the first place, nearly all our cases of ringworm of the scalp belong to the small-spored variety, which is admittedly difficult to cure as a rule, especially in hospital practice. As to the few large-spored cases of tinea tonsurans which come under observation some are very obstinate, a fact already noted by several writers,[7] and confirmed by results obtained at University College Hospital. Nor are treatment and prognosis in tinea sycosis modified by the knowledge that the condition is due to a large-spored fungus. Both the cases of kerion were caused by trichophyton megalosporon and ran the usual course. They could not be compared with kerion cases due to microsporon Audouïni. Tinea circinata of the glabrous skin is, as a rule, readily cured, be it of large- or small-spored origin, and need not detain us. Apart from this, however, the question of the plurality of ringworm fungi is an interesting one, but as the scope of this paper is of a practical nature theoretical considerations will not be dwelt upon.

Before concluding I wish sincerely to thank my teacher, Dr. H. Radcliffe-Crocker, not only for placing the cases and notes at my disposal, but for much kindly encouragement during the progress of the inquiry.

CONCLUSIONS.

1. In a general way my results agreed with those of previous London observers (*vide* foot-note 3). The clinical and microscopical descriptions of Grüby[8] and Sabouraud[9] were in the main confirmed. Some points, however, must be more particularly referred to.

2. *Small-spored ringworm.*—In the scalp the diseased hairs were usually found growing in various directions. In this I agree with Malcolm Morris and differ from Sabouraud, Adamson, and Colcott Fox, who state that they grow in the direction of the natural set of the hair. Small-spored kerion did not come under my observation. Adamson, Fox and Blaxall, and Morris have met with it in London. Opinions differ as to the mode in which the hair is attacked. I have seen the mycelium of the small-spored fungus invading a hair at its root end. This is not in accordance with Sabouraud. I agree with Adamson and Fox that the fungus is in the epidermis before the hairs are affected. It appears to me to be natural that it should be so; but Sabouraud and Morris hold a contrary opinion. The abundant segmented and sporulated mycelium depicted by Fox and Blaxall[10] was never seen by me in the case of microsporon Audouïni of the scalp. On the body the lesions were sometimes in distinct rings, with a well-defined border and somewhat depressed centre; moreover, the border was frequently decidedly reddened and even slightly inflamed. This also does not agree with Sabouraud's original descriptions. In the series under consideration small-spored tinea circinata was as frequent as tinea circinata due to large-spored fungi. The view generally held is that nearly all the cases are of the latter kind. In adults this is certainly the case, but not in children. Moreover, small-spored tinea tonsurans may be associated with multiple small patches and rings on the body and limbs, but this is a rare occurrence. This again does not agree with Sabouraud's rule. The microsporon form of scalp ringworm appeared to be more contagious than that of megalosporon origin. This agreed with Sabouraud's Parisian experience.

3. *Large-spored ringworm.*—In tinea tonsurans the diseased hairs are usually broken off at or near the level of the scalp, but occasionally they are found projecting beyond the level of the scalp. This form is not always readily cured. It may be very obstinate and resist treatment for several years, a fact already noted by other London observers (H. Radcliffe-Crocker, Aldersmith, and Fox), but which does not agree with Sabouraud's Paris experience. The clinical appearances both in the scalp and on the body vary. This polymorphism has been insisted on by Sabouraud and confirmed in the case of London. The two cases of kerion belonged to this group and so far confirm Sabouraud's view, but whether they were derived from the horse could not be ascertained; the father of one of the patients was a carman. In tinea sycosis the fungus is not readily found. It may escape detection altogether where suppuration is well marked and when repeated examinations of many hairs are not made. This is generally admitted. The varieties of trichophyton megalosporon (endothrix, ectothrix, and endo-ectothrix) could not always be differentiated with certainty by microscopical examination.

4. *Relative frequency of large- and small-spored tinea tonsurans.*—My figures—viz., 96 small-spored to 4 large-spored—agree closely with Adamson's (178 to 5). Morris states that microsporon Audouïni is responsible for about 90 per cent. Fox and Blaxall give from 80 to 90 per cent., taking *all* ringworms (scalp, body, beard).

5. *Etiology.*—In no single case was it possible to demonstrate an animal origin. Several of the cases of tinea tonsurans had apparently been contracted in fever hospitals.

6. *Diagnosis.*—The differential diagnosis of large- and small-spored ringworm could usually be arrived at on clinical grounds alone and nearly always confirmed by a microscopical examination.

7. *Treatment and prognosis.*—With regard to these two points it is practically "as you were," for the two reasons already given, viz.: (1) nearly all the London cases of ringworm of the scalp (which alone concerns us here) are small-spored, which are admittedly obstinate; and (2) of the remaining rare large-spored cases some are extremely resistant to treatment.

Upper Gloucester-place, N.W.

[7] H. Radcliffe Crocker: Diseases of the Skin, second edition, p. 815. Aldersmith: Op. cit., p. 60, et seq. Colcott Fox: British Journal of Dermatology, July, 1898, p. 253.
[8] Loc. cit. [9] Loc. cit. [10] Loc. cit.

A CASE OF TYPHOID FEVER IN WHICH A FATAL ISSUE FROM EXTREME TYMPANITES WAS AVERTED BY PUNCTURE OF THE TRANSVERSE COLON.

BY J. W. DALGLIESH, M.D. DURH.

THE patient was a man, aged about thirty years. He was first seen by me on Sept. 29th, 1896, and had then been ailing for four days. He complained of severe headache, giddiness, lassitude, bleeding from the nose, free perspiration, and inability to sleep. His temperature was 103° F. His tongue was furred and injected. When he was admitted to hospital on Oct. 1st typical spots were seen on the abdomen and chest. On the 2nd there were tympanites and colicky pains. He undoubtedly had peritonitis. On the 4th vomiting and diarrhœa were present. On the 7th the tympanites was most extreme, displacing the heart and interfering with its action. The apex beat was well above, and to the left of, the left nipple. The pulse was very frequent, irregular in time and force, intermittent, small and short, and devoid of tension. The patient's countenance was drawn, haggard, and pinched, and there were stupor and picking at the bedclothes with muttering delirium. The tongue was dry, raw, and beefy. The temperature was 104·4° and he appeared to be sinking fast. The administration of turpentine by the mouth was useless. Opium had already aggravated the condition. The passage of a long tube up the rectum led to the most tremendous evacuation of typical pea-soupy fluid which was horribly offensive, but no relief was obtained. Could more be done? The transverse colon was beautifully delineated, running across the abdomen in a very distended state. I boldly pushed a Southey's trocar and cannula into it. On withdrawing the trocar much gas escaped with a loud hissing noise for two minutes. At once there was great

relief to the abdominal distension and the facial expression improved wonderfully. The temperature rapidly dropped to 100°, the pulse became less frequent, regular and stronger, the tongue became moistened, the delirium disappeared, and much flatus began to be passed from the anus. On Oct. 9th the abdomen was quite flaccid and the bowels acted six times, the patient sleeping well. The temperature was 98° and the pulse was 72. On the 14th the tympanites was beginning again, but the albumin had disappeared from the urine. There were fresh spots and a troublesome cough from bronchitis. On the 16th the hæmorrhage from the bowels weighed 4 oz. On the 17th the patient became suddenly cold and collapsed. Internal hæmorrhage was diagnosed. On the 24th there was a fresh crop of spots with a return of fever. A few more interesting features may be related. On the 30th at 4 P.M. a marked rigor occurred immediately after a glycerine enema. On Nov. 1st a fresh rigor was experienced in the early morning for which there was no obvious cause. There was no malarial history and no sign of suppuration or inflammation. On the 2nd there was a rigor in the afternoon immediately after the bowels had been moved naturally. The patient was now put on quinine in large doses, which had previously been taken without benefit, and the temperature at once became subnormal and remained so until he left the hospital, but for several days after the last rigor he vomited after each movement of the bowels. He left the hospital looking remarkably well, but whilst at the seaside in December he was attacked with phlebitis and thrombosis of both femoral veins. He was, however, quite well on Jan. 15th, 1897, and had resumed work.

The case was a very severe one from the first. The patient was most carefully fed and well nursed throughout and the severity of the symptoms and the number of complications and the relapse were apparently entirely due to the severity of the poison of the disease. The patient's temperature from Sept. 30th to Oct. 8th averaged about 102°; on Oct. 9th, 10th, and 11th it was normal; from Oct. 12th to the 21st it averaged about 101°; on Oct. 22nd it was normal; from Oct. 23rd to the 27th it averaged about 101°; on Oct. 28th and 29th it was normal; from Oct. 30th to Nov. 2nd it averaged about 101°; on the evening of Nov. 2nd it was 104·4°; on the morning of Nov. 3rd it was 97·0°; and, as already mentioned, it remained subnormal during the remainder of his stay in hospital.

Bloemfontein, Orange Free State.

VACCINATION AND VACCINATION MARKS.

BY JOHN LOWE, M.D. EDIN.

THE vaccination question has long been drifting into an apparently hopeless tangle, and now that a "conscience clause" has been passed in the new Vaccination Act without any machinery being provided for better informing the public, but leaving it to the teaching of the opponents of vaccination, the position becomes still more perplexing and will, it is to be feared, proceed from bad to worse. It is not cheering for two-thirds of the people of this country to find in their midst a one-third minority of unvaccinated people who assume the right of controlling all legislation and who, being themselves open to the ravages of small-pox, feel no compunction at the idea of spreading it broadcast among their neighbours. That they had some grounds in time past for their objections to vaccination is admissible, and indeed this was freely admitted by the Royal Commission on Vaccination. Henceforth it will be more prudent not to quarrel with the views of these objectors, but to "trim our sails and let old bygones be," and to use every means to meet their objections and prejudices. This can be done only in two ways: firstly, by rendering the operation absolutely harmless and painless, so that no possible exception can be taken to its performance, and, secondly, by fully educating the public in the knowledge of the freedom from pain and risk which it secures and of the enormous benefits which follow from it.

The use of calf-lymph has largely diminished the risks of vaccination and the possible objections to it, but it cannot be denied that much remains to be done before the operation is a perfect one. Lord Lister's suggestion in the House of Lords that the time is not far distant when a completely antiseptic mode of vaccination will be attained commends itself as a valid and wise reason for delaying compulsory legislation until this period arrives. Dr. Copeman's glycerinated vaccine is an important advance in this direction, but, as has been pointed out, it is still on its trial and admittedly does not fulfil Lord Lister's desideratum of a perfectly antiseptic operation. Although the sequelæ have been greatly modified by it, its incompleteness is shown by its leaving the vaccination marks or cicatrices which are, for some inscrutable reason, regarded by the Local Government Board as the essential proof of success. The marks are, however, I think, a palpable proof that the operation has been non-antiseptic. They show that the pustular or suppurative stage has been reached and that the febrile state has been intensified and general irritation set up in the system by the absorption of septic poison from the pustules.

Hence the question arises, Is this suppuration and its attendant blood-poisoning a necessary part of vaccination? To this question I should reply with an emphatic negative, although I am bound to admit that, for a reason to which I shall advert presently, there is no absolute evidence on the subject. The insertion of vaccine lymph into the system produces certain changes of which the outcome is the vaccine vesicle. When this is fully formed and filled with colourless liquid the process is, I take it, complete, and it is difficult to believe that the subsequent change of this fluid into pus and the absorption of septic matter can add anything to the protective influence of the vaccine. That any chemical substance added to the vaccine lymph can make the whole process of vaccination antiseptic is doubtful, and it does not appear how under ordinary conditions, when a vesicle has fully formed, it should fail to go on to the formation of pus, except by direct antiseptic measures applied to the vesicle itself. For more than twenty-five years I have always used a plan of this kind. By means of a fine camel-hair brush a solution of pure carbolic acid is applied to the vesicle on the seventh or eighth day, the surrounding skin having been previously oiled with salad oil. A few seconds after the application tepid water is poured over the spot and a piece of antiseptic wadding is applied and strapped on lightly. The scab separates without a trace of suppuration and therefore without leaving the faintest cicatrix. Long ago I published this plan, but was met with the unanswerable argument, from the public vaccinator's point of view—"Without the cicatrix there will be no grant." Then there was the obvious suggestion that the protective influence of the vaccine may have been diminished by the treatment. I do not believe this. One might as well contend that small-pox treated as it has been by me in the same way was no longer small-pox, but some milder and less protective malady. It is, however, a question requiring examination and full investigation, and the time has come for this to be done, as I have long been sure it must come.

Some years ago, in speaking to a prominent member of the Royal Commission on Vaccination on the subject, he suggested that I should make these investigations, which in a certain degree are experimental though perfectly harmless, requiring only a revaccination after a stated period. I have made endeavours to carry them out with the result that the authorities refuse "to allow any experiment to be made in a public institution." One cannot quarrel with this decision, but it seems a pity that so simple a thing cannot be done, and one is disposed to wonder how Dr. Copeman's great improvement or Lord Lister's suggestion could be carried out without an equal amount of experiment.

The Local Government Board's insistence on the importance of the cicatrix is, I think, illogical. The work of the inspector consists mainly of examining these marks in a certain number of cases taken at haphazard from the public vaccinators' books, and on these the money grants for excellent results are founded. But it would certainly be as easy and much more satisfactory—supposing the antiseptic process to be adopted—for the inspector to pay a surprise visit on a vaccination day. He would then see not only how the cases which had been vaccinated during the previous week had succeeded, but also how the antiseptic provision on the eighth day was carried out. Surely, this would be a more satisfactory inspection than a glance at a scar and one which would give a much better idea of the character of the work done.

Gloucester-place, W.

DOUBLE EMPYEMA FOLLOWED BY RECOVERY.

BY W. H. COOKE, M.D. BRUX.,
LATE RESIDENT MEDICAL OFFICER, THE ROYAL UNITED HOSPITAL, BATH.

DOUBLE empyema is so rare that I think the following case may be of interest. The patient was a girl, eleven years of age, who was admitted to the Royal United Hospital on Sept. 14th, 1896, her illness having commenced on the 11th with pain in the abdomen and vomiting. On admission she looked acutely ill and had a flushed face, marked dyspnœa with orthopnœa, and a rather tuberculous aspect. Her temperature was 102·6° F., the respiration was 40 and shallow, and the pulse was 114. There were signs of pneumonic consolidation together with friction at the right base. Three days after this friction and signs of consolidation were present at the left base also. The respirations rose to 66 per minute, the pulse to 160, and the temperature to 105°. There were considerable distress and continued crying out from the pleuritic pain. On Sept. 24th signs of fluid at both bases were present, the heart's apex being in the fifth space immediately outside the nipple line. On the 30th the left side of the chest was explored with a syringe and pus was withdrawn. On the next day an incision was made in the ninth space and a soft indiarubber tube was inserted, whereupon much flaky, sweet pus escaped. On the following day the pleura was washed out with 1 in 80 carbolic solution. On Oct. 6th, pus having been discovered on the right side by means of a small exploring syringe, an incision was made in the ninth space and an indiarubber tube was inserted. From this side also a large quantity of "laudable" pus escaped and the side was washed out next day. I regret to say that the pus was not examined microscopically. At both operations the A.C.E. mixture was administered and no unfavourable symptoms occurred. Both sides were washed out daily with iodine water until Oct. 30th, when the tube on the right side was removed and that on the left side on Nov. 9th. On Nov. 25th the girl was up and about; she was putting on flesh rapidly, both wounds having healed up. The temperature was normal and there was no deformity of the thorax, but at both bases there was a want of resonance, together with distant breath sounds which were probably due to thickened pleuræ. The heart's apex came back to its normal position.

From Sept. 14th to 20th inclusive the patient's temperature varied between 100·4° and 103·8°, with the exception that on the evening of the 17th it was 105°. From the 21st to the 28th inclusive it varied between 98° and 101°, with the exception that on the evening of the 25th it rose to 102° and on the evenings of the 27th and 28th to 101·6°. From the 29th to Oct. 13th inclusive it varied between 98° and 102·4°, with the exception that on Oct. 7th it was 97·4° at midday and 103·4° in the evening. On the 14th it varied from 97·6° to 100·6°. From the 15th to the 21st inclusive it varied from 97° to 100°, with the exception that on the 17th it was 100·2° and on the 19th 101·2°. From the 22nd to the 25th inclusive it varied from 97·4° to 99·6°. From the 26th to Nov. 15th it varied from 97° to 99·4°.

It will be admitted, I think, that double empyema is extremely rare—in fact, this is the first case which I have seen during twelve years' connexion with hospitals. Walshe, in his "Practical Treatise on Diseases of the Lungs," writes: "Cases of double empyema are, as a general rule, unfit for operation unless evacuation be rendered necessary for the prevention of asphyxia." Treves, in his "System of Surgery," vol. ii., p. 441, writes: "Double empyema is a very grave condition and, happily, not common. The two sides should not be opened at the same operation, but an interval of a few days or a week should elapse between the two operations." He concludes thus: "It is a striking and apparently a paradoxical fact that an operation (opening both pleuræ) which, if performed on the healthy, would be invariably fatal in its effects is a valuable means of saving life when employed in conditions of disease." That this child should have recovered in the way in which she did was a great surprise to me, for her condition on more than one occasion was extremely critical.

Bath.

A CASE OF ACCIDENTAL OVERDOSE OF CHLOROFORM.

BY EDWARD LAWRIE, M.B. EDIN.,
LIEUTENANT-COLONEL, I.M.S.; RESIDENCY SURGEON, HYDERABAD (DECCAN).

THE events now described took place between 8 and 9 A.M. on June 9th, 1898, at the Afzulgunj Hospital. The patient was a male native, thirty-six years of age, upon whom an operation was to be performed for cario-necrosis of the lower jaw. He had not had any food since 6.30 A.M. Immediately before the operation his pulse was found to be 128 per minute and weak; his respirations were 28. The chloroformist was Mr. Hamid-ud-Din, a third-year student of the Hyderabad Medical School. The notes were taken by Lieutenant-Colonel Lawrie until anæsthesia was complete.

Administration commenced in one-drachm doses on a cap as follows (the figures give the hour with the minutes and seconds):—

H.	M.	S.	
8	23	15	Cap applied, natural breathing, patient told to blow into the cap if he had a feeling of being choked.
8	24	0	Chloroform added to the cap; one breath of air taken.
8	24	55	Patient struggling, but breathing regularly.
8	25	0	Chloroform added to the cap; one breath of air taken.
8	25	50	Patient spitting.
8	26	0	Chloroform added to the cap; one breath of air taken. Patient struggling very violently but breathing regularly and deeply.
8	26	45	The patient was struggling so violently and taking such deep inspirations that although they were regular the chloroformist was told to remove the cap and give nothing but air. The patient took three full breaths of pure air and the cap was then reapplied.
8	27	10	Chloroform added to the cap. Two breaths of air taken. The patient became quiet and began snoring before the cap was reapplied.
8	27	25	Cornea insensitive; the cap removed. (It was never put near the face again. The notes were now taken by the assistant house surgeon.)
8	28	0	The patient's breathing stopped suddenly; his eyes were staring, his pupils were widely dilated, and his skin was pallid. The surgeon sprang on to the table and, kneeling astraddle the patient, commenced artificial respiration. The chloroformist pushed forward the patient's lower jaw and opened his mouth, and the house surgeon pulled out his tongue. There was great delay and difficulty in doing this as the teeth of the right half of the lower jaw were all loose, and there was a piece of loose dead bone. Another assistant poured some nitrite of amyl on to a handkerchief and held it over the patient's face, while the artificial respiration was going on, in such a way that it was freely inhaled.
8	30	40	Natural breathing restored. Artificial respiration stopped.
8	32	30	Consciousness returning.
8	35	15	Operation finished. Patient walked out of the room.

In this case the overdose was taken in during the struggling stage, which was due to intoxication, the breathing being quite regular. Overdosing with regular breathing, even if it be abnormally deep, is the rarest form of chloroform accident which is met with clinically, and it is more than ordinarily dangerous because the regularity of the respiration puts the chloroformist off his guard. The fault in the administration consisted in not at once giving the patient more air when the struggling became violent and the breathing abnormally deep. At 26 minutes 45 seconds past 8 o'clock when the chloroformist was told to give the patient air alone—because it was evident that he was inhaling the chloroform too freely—the cap should not have been reapplied until the breathing became normal and it was known

whether the anæsthesia was becoming deeper or not. The mechanism of the action of an overdose in a case like this is explained on page 17 of the Hyderabad Commission's report: "(2) If the inhalation (of chloroform) is interrupted at any stage the fall of blood-pressure continues at a rate which altogether depends on the rapidity of the fall while the chloroform was being inhaled. This afterfall is probably due to absorption of a portion of the residue of chloroform in the air passages after the stoppage of the inhalation. In this way it often happens, if chloroform is given rather freely (more especially if there has been struggling and deep inspirations), that though the respiration is going on when the chloroform is discontinued it afterwards stops."[1] The restoration of the patient was effected by artificial respiration and the artificial inhalation of nitrite of amyl, and the rapid recovery after natural breathing had recommenced was probably due to the beneficial action of this drug.

Hyderabad.

A SIMPLE AND EFFECTUAL METHOD OF STERILISING CATGUT.

BY A. W. MAYO ROBSON, F.R.C.S. ENG.,
SENIOR SURGEON TO THE GENERAL INFIRMARY AT LEEDS, AND PROFESSOR OF SURGERY IN THE YORKSHIRE COLLEGE OF THE VICTORIA UNIVERSITY.

A GROWING sense of the superiority of readily absorbable material such as catgut for ligatures and buried sutures, if only one could be sure of its absolute asepticity, and the acknowledged uncertainty of the commercial preparations, led me to make some experiments on the effect of heating catgut in substances other than water with the view of determining whether after heating for some time to a temperature of 100° C. it would still be sufficiently strong to be employed as a suture or ligature. At first, I used methylated spirit which was heated in a cylinder made for me by Messrs. Down Brothers and specially prepared to withstand the pressure under which spirit would be when subjected to the temperature of boiling water. The results obtained were satisfactory, the catgut after being heated in alcohol for twenty minutes being quite as strong as before heating. This substance was given up only because it was considered inadvisable to run the risk of an explosion if some fluid equally suitable in other respects could be obtained which had a boiling-point higher than water. Three substances were selected: aniline, the boiling-point of which is 184·5° C.; xylol (di-methyl-benzene), which boils at about 140° C.; and glycerine, the boiling-point of which is above 100° C. and which at ordinary atmospheric pressure decomposes before it reaches its boiling-point. Trials with each of these three substances left the catgut strong, but on the whole xylol has been found to give the best results, and, indeed, when it is used the result is better than with methylated spirit, the catgut shrinking, gaining in strength, and "biting" better when tied. For some time I have used catgut, usually the "00" size, prepared in this way and have had every reason to be satisfied with it. At the outset the ordinary dry chromic carbolic catgut was used, but recently I have employed ordinary unmedicated catgut with equal satisfaction.

The exact method adopted is the following. The catgut is wound *loosely* from end to end round an elongated glass reel made for me by Messrs. Reynolds and Branson of Leeds. Several of these glass reels are then introduced into a metal cylinder, the cap of which screws on, and after more xylol than is sufficient to cover them has been poured in the cap is adjusted. The whole is then put into the boiling water in the steriliser and allowed to remain along with the instruments for from 20 minutes to half an hour. After being thus sterilised the reels with the catgut which has shrunk round them are removed *at once* and kept either in 5 per cent. carbolic acid solution or in methylated spirit, the latter being preferable, as any aqueous solution tends to cause catgut to swell. In this solution they may be kept on the reels till required. I have kept them as long as five weeks without any diminution in the strength of the gut, but I ordinarily prepare the catgut at the same time and along with the other instruments before each operation. After each heating the cylinder should be dried and the used xylol rejected, as a certain amount of decomposition takes place and catgut will soften if heated in it a second time. Care should be taken that no water is allowed to mix with the xylol, or of course the catgut will gelatinise.

The great advantage of this method of sterilising catgut lies in its simplicity and the ease with which it can be carried out, while, judging from clinical results, especially those in which unmedicated gut was used, the sterilisation seems to be absolutely complete. I have to thank my friend, Dr. Farquhar Macrae, for his kind assistance in carrying out the numerous experiments which had to be performed before arriving at the perfected method which I feel that I can fully recommend to other operators.

Leeds.

[1] It must be remembered that in all the experiments of the Hyderabad Commission chloroform was administered very freely in order to test the effects of overdoses.

VAN ERMENGEM'S METHOD OF STAINING FLAGELLA: A MODIFICATION.

BY J. W. W. STEPHENS, M.B. CANTAB.,
JOHN LUCAS WALKER STUDENT, UNIVERSITY OF CAMBRIDGE.
(*From the Pathological Laboratory, Cambridge.*)

VAN ERMENGEM'S solutions consist of: 1. Osmic acid, 2 per cent. solution, 1 part; tannin, from 10 to 25 per cent. solution, 2 parts; to each 100 c.c. add from 4 to 5 drops of glacial acetic acid. 2. Gallic acid, 5 grammes; tannin, 3 grammes; fused acetate of soda, 10 grammes; distilled water, 350 c.c. 3. Nitrate of silver, from 0·25 to 0·57 per cent. solution.

The method of using these solutions can be found in most elementary text-books of bacteriology. With care precipitates can be avoided and clear, well-stained flagella shown. But at other times, and especially in class work, thick deposits of silver result and very few, if any, flagella are shown. To careful workers, also, with this method failures are by no means unknown. The modification which, in my hands, has given beautiful results consists in using instead of nitrate of silver one of the many compounds of silver and albumin now on the market. I was led to try one of these compounds as it is stated of them that they are not precipitated by chlorides or albumin. The particular compound used by myself is "largin," which contains over 10 per cent. of silver. This body smells of ammonia and when dissolved in distilled water forms a clear brown solution. Chlorides give a mere trace of precipitate. I follow exactly the usual procedure, using as my silver bath a 2 per cent. largin solution, which will contain about 0·2 per cent. of silver. The actual times in each particular solution after the mordant are of little importance and the film may be passed back and fore from silver to gallic acid three or four times or oftener. If this method be tried it will be noticed that a greyish film is formed on immersing in the gallic solution after previous immersion in the silver solution. On replacing in the silver solution this film is dissolved up and the cover-glass is left perfectly clear, the silver solution taking on a deep mahogany colour, but no precipitate forms in the silver bath. The film has thus passed through (1) largin (from 2 to 10 minutes), (2) gallic acid (from 2 to 10 minutes), (3) largin (till clear), (4) gallic acid again if necessary, and so on back and fore. These details may be varied at will—e.g., the film may be rapidly washed in water between each bath (or the film may even be blotted); it is well to drain off excess of silver before putting in the gallic acid bath, but these are points which each observer can easily find out for himself, the "condition" of the cover-slip being the important matter.

In preparing the cover-glasses they should always be burnt on a piece of wire gauze to remove all fat. The ease and certainty with which well-stained, clean preparations can be obtained by this method have induced me to publish this brief note in order that others with time at their disposal may find out by trial the best strength of "largin" solution to use and whether "protargon" or other similar bodies could equally well be used. I have stained so far in this way the typhoid bacillus, Gärtner's bacillus, bacillus fluorescens, vibrios, and micrococcus agilis (the latter showing extremely long flagella with large open curves). It is quite possible that an ammoniacal solution of silver nitrate would give the same result, but this I have not actually tried.

Cambridge.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON A CASE OF SACRO-ILIAC DISEASE.

BY ARCHIBALD W. CUFF, B.A., B.C.CANTAB., F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE CHILDREN'S HOSPITAL, SHEFFIELD.

THE serious nature of tuberculous disease of the sacro-iliac joint has long been recognised, but its comparative rarity and the failure, until within the last few years, of operative measures devised for the relief of its later and more severe forms, may perhaps invest the record of the following case with some interest.

A youth, aged eighteen years, came under my care in May, 1897, complaining of pain in the lower part of the back and inability to walk. He had first experienced pain over the sacral region eight months before, and this had been getting worse. With the increase of the pain came a sense of weakness in the left lower limb and an inability to bear much weight upon it. Three weeks before I saw him a swelling had been noticed to be present over the region of the sacro-iliac joint. The patient's father and mother had died from phthisis. The patient was very thin and appeared to be in much pain. All the classical signs of disease of the sacro-iliac joint were present. Severe pain and sense of weakness were present in the sacral and gluteal region. The former was made worse by movement and by pressure on the iliac bones. Manipulation of the hip showed that joint to have perfect movement, although owing to the severity of the neighbouring lesion it caused pain in spite of my endeavour to immobilise the pelvis. The lameness, the inability to walk, and the alteration in the shape and the apparent length of the limb were well marked. The glutæi were wasted, as were also the muscles of the limb. An oval swelling, with its long axis almost vertical and about four inches in length, was present over the position of the left sacro-iliac joint. This swelling fluctuated and was obviously an abscess. The diagnosis of left-sided sacro-iliac disease was made and the operation devised by Collier and Golding-Bird was performed for its relief. Under an anæsthetic I raised in a forward direction a large semi-lunar flap, consisting of skin, fascia, muscle, and posterior ilio-sacral ligament, and having thoroughly exposed the bone I proceeded with a half-inch trephine to remove a crown of bone from the neighbourhood of the base of the inferior posterior iliac spine, just above the upper border of the great sciatic notch and immediately over the joint. In raising the flap the abscess, which overlay the joint beneath the muscle and fascia and which communicated with the joint by a sinus, was opened, and its wall was afterwards scraped and cut away. A probe passed into the sinus went into the joint, passing between the iliac and sacral surfaces to do so. On removing the circular crown of bone the joint was opened in its lower part. A distinct though small cavity containing granulations and minute fragments of bone and pus was present. The contents of the cavity were removed with a scoop and with the gouge and mallet the surrounding diseased portions of bone were excised. The disease appeared to have spread laterally, involving the ilium, rather than upwards, and it was confined chiefly to the lower part of the joint. Having removed as far as possible all the morbid material and otherwise cleansed the wound the flap was replaced in position and secured with silkworm gut stitches. Up to the first dressing at the end of a week all went well and the incision seemed to be healed, but at the second dressing tuberculous nodules appeared in the line of incision and in the flap and a collection of opalescent fluid beneath it. The diseased portions were again cut and scraped away and the wound was plugged with iodoform gauze. Iodoform emulsion was injected into the wound every two or three days and the plugging was repeated. The wound steadily but slowly healed. The patient was kept lying in bed with a long outside splint on the diseased side for several months and then allowed up in a wheeled chair. The pain and lameness disappeared and in January, 1898, he resumed his work as a cutler. I saw him in the last week of August. I found him free from any trouble and in good health. A depressed, painless, firm scar, semilunar in shape, marks the site of the operation. The pelvis seems to be perfectly firm though from the amount of bone removed at the operation I had considerable doubts as to its future stability.

Sheffield.

A CASE OF SEPTIC PERITONITIS; LAPAROTOMY; RECOVERY.

BY H. W. MILLS, M.R.C.S. ENG., L.R.C.P. LOND.

THE patient was a strong, well-nourished woman, aged about forty years. There was a history of gonorrhœa many years ago. I had attended her on and off for some eighteen months previously for attacks of pelvic peritonitis, a pelvic abscess forming and discharging each time *per vaginam*. On the present occasion she had treated herself by rest in bed and hot douches, expecting the usual termination to her trouble. Such, however, did not occur; on the contrary, the pelvic abscess broke into the general peritoneal cavity and septic peritonitis resulted. When I saw her she was lying on her back in bed with her knees drawn up. The abdomen was greatly distended; low muttering delirium and constant retching had been present for twenty-four hours. The temperature was 103° F. and the pulse was 140. *Per vaginam* the cervix was felt high up and the uterus was fixed as if in plaster of Paris. There was bulging in the posterior and lateral fornices, especially in the left. On the following day, chloroform having been administered, I opened the abdomen in the middle line. The abdominal walls, omentum, and superficial coils of intestine were densely adherent, and the latter were with some difficulty separated sufficiently to admit three fingers into the general abdominal cavity. On withdrawing the fingers several quarts of brownish, very offensive fluid containing large thick flakes of lymph escaped and subsequently about a pint of evil-smelling brown pus. The upper part of the abdominal cavity was partly, at any rate, shut off by adhesions. The abdominal cavity was thoroughly irrigated with boiled water, the peritoneum was plugged with iodoform gauze, a tight binder was applied and the patient was put back to bed in a collapsed condition. She rallied, however, after a hypodermic injection of strychnine and an enema of hot, strong coffee and brandy. For several weeks her condition was critical, intestinal obstruction threatening on several occasions. The wound was dressed twice a day after the first twenty-four hours, the cavity being irrigated with boric acid lotion and later with lotio sodæ chlorinatæ, and subsequently replugged with iodoform gauze. A considerable amount of pus continued to escape for several weeks. Hypodermic injections of morphia had to be repeatedly given during the first three weeks after the operation for the relief of pain and for the troublesome and persistent attacks of retching. Eventually the discharge became serous and finally it stopped, the cavity contracted, and the abdominal wound granulated up. The patient made an excellent recovery and is now, a year after the operation, in the best of health.

Ruardean.

NOTE ON A CASE OF OXALIC ACID POISONING; RECOVERY.

BY F. J. LORIMER HART, M.B., C.M. EDIN.,
ASSISTANT SURGEON, HOME AND INFIRMARY FOR SICK CHILDREN, S.E.; DIVISIONAL SURGEON, METROPOLITAN POLICE.

I WAS recently summoned to a case of attempted suicide and taking the stomach syphon-tube and hypodermic case I arrived within twelve minutes after the poison had been swallowed. I was shown a "tumbler" to the sides and bottom of which were clinging rather less than one and a half drachms of undissolved crystals having the taste and appearance of oxalic acid. The patient, a lad, aged fifteen years, was unconscious; his skin was markedly pallid and clammy and his extremities were cold. No pulse could be felt at the wrist. The pupils were fully dilated and his lower jaw was fixed in tetanic spasm, froth exuding between the teeth. He was said

by the friends to be just recovering from a strong convulsion. I injected one-tenth of a grain of apomorphia hypodermically. The stomach syphon-tube was then passed after levering the lower jaw open and upwards of a pint of warm water was introduced into the stomach. This was almost immediately expelled, no doubt by the action of the apomorphia. On a second attempt to pass the tube the patient began to struggle — consciousness having partially returned—and it was found impossible to wash out the stomach thoroughly. Vomiting, however, continued and the organ appeared to have been well evacuated. He had by this time sufficiently gained consciousness to be induced to swallow about half an ounce of powdered chalk suspended in water which was shortly afterwards ejected. With the aid of brandy, strychnine, and digitalis administered hypodermically he had recovered so as to be out of danger in two hours, the heart's action, however, failing several times during that period.

On inquiry I found that the lad had purchased half an ounce of oxalic acid from a local druggist and that the whole of this quantity had been used in making the solution, all of which he drank except what had remained undissolved. This made the quantity taken upwards of two and a half drachms. In a previous case of oxalic acid poisoning to which I was called the patient died within a quarter of an hour of swallowing the fatal dose. The quantity taken in that case was unknown, but was probably over half an ounce. According to Taylor, one drachm is the smallest quantity of oxalic acid which has been known to destroy life at the age of sixteen years, death occurring in eight hours. Under three minutes is given as the shortest known period of survival after an unknown quantity of this poison had been taken.

Sydenham.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Procemium.

KING'S COLLEGE HOSPITAL.

A CASE OF CHRONIC GLANDERS; RECOVERY.

(Under the care of Mr. WILLIAM ROSE.)

IN THE LANCET of Sept. 24th we published the history of a case of glanders in which much difficulty was found in arriving at a correct diagnosis. In the following case the diagnosis was greatly simplified by the very definite history of the disease in several horses among which the patient had worked. In this case the infection had occurred at three widely separated spots and at each there was much tendency to spread locally, but no absorption of the poison and generalisation of the disease took place. The difficulty of removing all the local disease by scraping is well shown in the sinus in the leg, which continued to extend for more than a year after its first appearance. The general health of the patient suffered very little considering the extensive and long-continued suppuration, and the favourable result demonstrates that if by persistent operation the local poison can be removed complete recovery may ensue. For the notes of the case we are indebted to Mr. C. A. Sprawson.

A young man, aged nineteen years, was admitted into King's College Hospital on Feb. 8th, 1897, suffering from multiple abscesses. His previous and family histories were quite unimportant and no evidence of syphilis could be obtained. His habits were very temperate and by occupation he was a carman and a worker in stables. About a month before admission to the hospital an abscess appeared, according to the patient's account, on the left side of his forehead; for this he consulted a medical man. A fortnight later two other abscesses appeared, one on the extensor surface of the right arm and the other on the outer aspect of the right leg. The abscess on the forehead was opened and as the patient did not seem to improve he was sent to the out-patient department of King's College Hospital, where he was seen by Mr. Carless, and the next day he was admitted to the ward. When examined on admission he was seen to have on the left side of his forehead a wound resulting from the opening of the abscess; from it pus was still flowing and a "pocket" passed from it downwards beneath the skin. With a probe bare bone could be felt. This cavity was syringed out with solution of carbolic acid (1 in 40) and packed with iodoform gauze. The house surgeon, Mr. G. Atkinson, opened the abscess on the arm and dressed it similarly; it was shallow, but extended under the skin. On the peroneal aspect of the right leg was seen a tense fluctuating swelling nearly 5 in. long; it was extremely tender and was evidently a large abscess. The patient's general appearance was healthy; his temperature was normal on admission, but it rose to 101° F. on the following day. The urine was acid and contained neither albumin nor sugar. There was no discharge from the nose and at first the patient denied that he had ever had any such symptom, but later he acknowledged that during the three weeks preceding admission there had been a watery discharge from the nose, which at the time he attributed to an ordinary cold. The case was not thought at first to be one of glanders, but on the day after admission inquiries elicited that in his work as carman the patient had much to do with twelve horses, and that six weeks before admission six of these horses, one after another, developed swellings in the neck; they were seen by a veterinary surgeon and were killed. In his own mind the patient had never connected the disease of the horses with his own illness and none of his fellow workers seem to have suffered at all in the same way, though about three months earlier one of them had a wound of a finger which took a fortnight to heal. On Feb. 22nd Mr. Rose incised the abscess in the leg and evacuated some blood-stained pus; there was no bare bone; the cavity was packed with gauze. The abscesses were dressed daily; it was found necessary on two occasions to make a counter-opening for the abscess on the forehead, as there was much burrowing; when the first counter-opening was made some pus escaped and some of it was caught in a sterilised tube and sent to the British Institute of Preventive Medicine for examination; the report on this pus stated that though no bacilli were discoverable microscopically in this pus, yet when guinea-pigs were inoculated with it they soon developed the typical symptoms of glanders. By March 12th the temperature had become normal, the patient's general health was good, though he was somewhat troubled with night sweats, but the healing of the abscesses progressed very slowly, and on April 6th it was found necessary to lay open the leg further downwards owing to the burrowing of the abscess. On May 7th the abscess in the arm had nearly healed, but as the burrowing of the abscess on the forehead had increased, the skin between the three sinuses was cut through and the cavity well scraped with a sharp spoon. The sinus in the leg was treated similarly. At first the wounds seemed to improve after this treatment, but later they all continued to spread, and Mr. Rose laid them open again, scraped them, and swabbed them out with liquefied carbolic acid. Every third day after this the wounds were swabbed out with carbolic acid and soon began to look more healthy. On June 14th a note was made that the patient's general condition had not been so good lately; he complained of headache and pains in the back and at the same time he showed a distinct *tache cérébrale*. The wounds also commenced to burrow again; they were therefore once more scraped and wiped out with pure carbolic acid. The carbolic acid was used every other day and all the wounds improved greatly and by July 14th the arm was well. Towards the end of July an attack of pharyngitis caused a temperature of 103° for a few days, but the wounds continued to improve, so that early in August he was able to get about on crutches. The ulcer on the head was smaller, but still discharged some greyish pus, which crusted round the wound causing a peculiar appearance which had been noticed during the whole of the case. The sinus in the leg increased in length and on Sept. 1st Mr. Carless laid it freely open and applied carbolic acid to the interior. By Sept. 20th both wounds were looking better; the ulcer on the forehead had healed except for a patch as large as a sixpenny-piece. The burrowing of the sinus in the leg continued and on Oct. 30th Mr. Rose made a counter-opening immediately below the external malleolus, avoiding the peronei

tendons. Two further examinations of the pus were made. The first was negative in result, but the second showed the bacilli of glanders. The ulcer on the forehead healed by Nov. 17th, but the sinus in the leg required several other operations, as it had tracked downwards along the tendon of the peroneus longus, but fortunately the process was stopped before it reached the sole of the foot. Healing gradually occurred, but was not complete until the middle of June, 1898.

DORSET COUNTY HOSPITAL.

A CASE OF HERNIA OF THE APPENDIX VERMIFORMIS; OPERATION; RECOVERY.

(Under the care of Mr. WILLIAM ERNEST GOOD.)

ALTHOUGH it is by no means unusual to find the vermiform appendix in the sac of a femoral hernia—as, for instance, in hernia of the cæcum—yet it is certainly rare for the appendix to be the sole occupant of a hernial sac. It is not unlikely that in many cases it may form so slight a swelling that the hernia is not noticed, and if no strangulation takes place the hernia may never be suspected. In addition to the cases quoted by Mr. Good in his remarks we may mention the following. Langton describes a case in which perforation took place.[1] Keetley also had a case,[2] and L. A. Bidwell describes two cases,[3] in neither of which was the appendix strangulated. In a case recorded by W. McAdam Eccles[4] the hernia was found post mortem in a man who died from carcinoma of the stomach; the hernia had apparently given rise to no symptoms. It is somewhat strange that strangulation of the vermiform appendix should cause such severe symptoms as occur in some cases, for there is no obstruction to the onflow of fæces. It is of interest to note that in nearly all the cases the patient was a woman. It is possible for an appendicitis to occur in an appendix while lying in a hernial sac,[5] and it is not improbable that some of the cases thought to be suffering from strangulation were really cases of appendicitis.

A domestic servant, aged thirty-nine years, was admitted to the Dorset County Hospital on March 8th, 1895, with a tense swelling in the right groin. This had existed since the previous day, was accompanied with pain and vomiting, and presented all the appearances of an irreducible, strangulated femoral hernia. The patient having been placed under chloroform Mr. Good cut down on the tumour and on opening the hernial sac it was found to contain a portion of a strangulated and congested vermiform appendix. About 4 in. or 5 in. were drawn out of the wound and after some constricting tissue had been divided the finger easily traced the appendix into the right iliac fossa. It was unusually long, probably at least 7 in. A double ligature of carbolised catgut was applied and about an inch of the appendix was cut off; the ends of the ligature were left long as a drain and the stump was left in the wound, which was partly closed by silver wire. On cutting open the amputated portion the diagnosis of the hernia being that of the appendix was confirmed by the presence in it of a little greenish, feculent-looking slime. The patient made a tedious convalescence, but was discharged well on April 6th.

Remarks by Mr. GOOD.—Hernia of the appendix vermiformis is not common. Mr. Davies-Colley in an article in the Guy's Hospital Reports[6] gives particulars of two cases which occurred in his practice and one which occurred under the care of Mr. Durham, and another under the care of Mr. Clement Lucas, and refers to five others. Recently Mr. Newbolt of Liverpool has published a case[7] and refers to two others, one by Mr. Annandale and one by Mr. Jacobson.

[1] St. Bartholomew's Hospital Reports, vol. xxvii., p. 179.
[2] Medical Press, 1890, p. 85.
[3] Transactions of the Clinical Society of London, vol. xxx., p. 186.
[4] Transactions of the Pathological Society of London, vol. xlviii., p. 87.
[5] Gangolphe: Brit. Med. Jour., April 2nd, 1892.
[6] Series III., vol. xxvii.
[7] Brit. Med. Jour., vol. i., 1897, p. 781.

WATER-SUPPLY OF CHARD.—Mr. F. H. Tullock, of the Local Government Board, held an inquiry at Chard on Sept. 20th relative to the application by the town council to borrow £2500 for works of water-supply. After a lengthened inquiry Mr. Tullock said that there was an obvious need for a proper water-supply for the whole town and added that this would have to be carried out. He also strongly commented on the inaction of the town council.

Reviews and Notices of Books.

Diseases of the Stomach. In Three Parts. By JOHN C. HEMMETER, M.D., Clinical Professor of Medicine in the Baltimore Medical College. London: H. Kimpton. 1898. Pp. xxvii. and 788. Price 30*s.*

Diseases of the Stomach: a Text-book for Practitioners and Students. By MAX EINHORN, M.D., Adjunct Professor in Clinical Medicine at the New York Post-graduate Medical School and Hospital. Second revised edition. London: Baillière, Tindall, and Cox. 1898. Pp. 486. Price 12*s.* 6*d.* net.

IT is significant of the attention now being paid to the subject of digestive disorders and also probably indicative of the prevalence of such maladies in the United States that the publication of an exhaustive treatise like that of Dr. Hemmeter should have been speedily followed by a second edition of Dr. Einhorn's text-book about a year after its first appearance. It is further evident that the endeavour to unravel the problems connected with gastro-intestinal derangements has been the source within comparatively recent times of much fresh knowledge upon the digestive processes. Thus there have been introduced many and more exact methods of examination of the functions of the stomach in health and disease which ought to have a practical application in the treatment of dyspepsia, the besetting malady of civilised mankind. Yet the actual gains to therapeutics due to these scientific methods and researches have been hardly commensurate with the trouble and ingenuity which have been bestowed upon them. To a certain extent they have only served to confirm the opinion formed of the value of old and well-tried measures introduced at a period when gastric chemistry was in its infancy, whilst many of the new methods which may be applied for diagnosis and treatment are so irksome to the patient that it will be long before they come to be universally applied, in spite of the rational basis on which they are founded. Nevertheless we cannot but welcome the insight given into the vital functions of the digestive organs by such patient investigations, with the assurance that every fact thus added to physiology and pathology cannot but have an important influence upon the true conception of these functions and the most appropriate measures to be taken to remedy their derangements.

Dr. Hemmeter's treatise comprises a thorough survey of the whole subject of disease of the stomach, and nothing is omitted which is material to its full comprehension. Indeed, if any criticism be allowable upon what has evidently been a most arduous and painstaking work, it would be that in some parts there is apt to be too much material, as, for instance, in the numerous diet tables which occupy the chapter on Dietetics. The author shows that he has a profound acquaintance with the abundant literature of the subject, and he certainly has brought his book quite up to date. It is, however, far from being a mere compilation, although there are not seldom copious citations, for Dr. Hemmeter has himself contributed not a little to the scientific investigation of gastric affections. The subject matter of the work is treated under three main divisions—namely, (1) Anatomy and Physiology of the Digestive Organs—Methods and Technics of Diagnosis; (2) Therapy and Materia Medica of Stomach Diseases; and (3) the Gastric Clinic. The description of the histology of the stomach is largely culled from the writings of Bensley and Mall, but the physiology of digestion is treated succinctly and more independently. This latter section comprises further the intestinal processes, where, by the way, we note the statement of the author that so-called intestinal disinfection is still "an unsolved

problem." Several methods for testing gastric peristalsis are described in a chapter devoted to this topic, the opinion being expressed that Ewald's salol method is unsuitable for private practice and that, moreover, the amount of salicyluric acid excreted in the urine by the use of this test, is considerably influenced by the blood-pressure. Klemperer's "oil" method and Fleischer's "iodoform" method are also described, as well as the ingenious mechanical instruments invented by Dr. Einhorn and by Dr. Hemmeter. The latter's "gastrograph" consists of a bag of the shape of the stomach which being introduced into the viscus is so adapted to its interior as to act as a recording apparatus of the latter's movements. The author considers that the motor function of the stomach is of the highest importance, for he thinks most of the disorders of secretion and absorption are to be attributed to defective motor activity. Several tracings (gastrograms) are given. The testing of the power of absorption and the means whereby the size and capacity of the stomach can be estimated are then described, including the ingenious method of "gastrodiaphany" which we owe to Dr. Einhorn. Ample information is supplied upon the use of the stomach tube, the practice of lavage and the several colour tests and other reactions upon the gastric secretion, and also there is an account of the examination of the gastric contents. In point of fulness this account leaves little to be desired. As already hinted, much consideration is given to the subject of dietetics which finds a place in the second part of the work. At the same time the author remarks, with justice, that there is no need to insist upon too harsh measures of restriction in most forms of dyspepsia. It is quite right for cooking to receive the attention here devoted to it, and many hints are given on the preparation of foods for invalids. The subject of alcohol and of the medicinal agents most in vogue in the treatment of gastric disease follows, whilst this portion of the work closes with an account of surgical intervention in organic disease. The third part of the book, which is devoted to the description of the various diseases of the stomach, opens with an account of gastritis, the author agreeing with Ewald and Penzoldt in discarding the term "catarrhal," and the pathology as well as the symptomatology of its various forms is amply discussed. The bibliography of the subject is most copious, and in addition to a lengthy list of authorities on the subject in general, more than four pages are filled with references to writings upon phlegmonous gastritis alone. Ulcer of the stomach is, we learn, associated with hyperacidity in 88 per cent. of cases and the etiology of the lesion is summed up as linked with one of four conditions—namely (1), impaired vitality or resistance of portions of the mucosa; (2) hyperacidity or supersecretion; (3) an altered state of the blood; and (4) local bacterial infection. So far as we could find, no mention is made of the view which has been forcibly put forward that the initial lesion of gastric ulcer is to be found in the solitary glands or lymphoid tissue. Indeed, the pathological anatomy of ulcer is not very fully treated in this work. Considerable space is given to malignant tumours and stress is laid upon the detection and examination of fragments of the mucosa in the vomit or washings of the empty stomach as an aid to diagnosis. The rare lesions of tubercle and syphilis are described from records in literature, and then follows an account of Benign Tumours. The subject of Motor Insufficiency and Dilatation is amply dealt with, and the same may be said of Enteroptosis and Gastroptosis, which are responsible for many ills and discomforts. The "Neuroses" are grouped under the heads of Motor, Sensory, and Secretory, and in each department it is claimed that there may be recognised states of excitation and states of depression of nervous influence. Whether the present state of knowledge is such as to enable the dyspepsias to be divided into the numerous conditions which can be assigned by such a division is questionable, but at any rate the scheme has the merit of being ideally complete, leaving but little room for any fresh additions to the list. We part from Dr. Hemmeter's work with the sense that it embodies the best knowledge of the time, that it is a book which is of inestimable value as a work of reference, and that it will well repay the most careful study which can be given to it. The index is remarkably complete.

Less ambitious in scope but covering the same field is the text-book of Dr. Max Einhorn. This book is more suitable for the practitioner but quite as abreast of modern inquiry as the larger treatise. Here, too, descriptions of methods of examination precede the detailed accounts of gastric disorders. The author's ingenious gastrograph (in some respects preferable to that of Dr. Hemmeter) and his gastro-diaphane are clearly described and their application in diagnosis is well brought out. Lavage and the "tests" of the stomach contents receive adequate and judicious treatment, whilst the amount of information which can be obtained by a careful microscopical examination of the washings of the viscus is a point worthy of the attention of all clinicians. The drawings of fragments of mucous membrane detached from the stomach, which show degenerative, atrophic, and neoplastic changes, are evidence of the value of the practice. The employment of the gastric douche and the use of direct electrisation of the interior of the stomach form new and valuable additions to measures of treatment, nor is their use difficult, as Dr. Einhorn plainly shows. We need not dwell at length upon the chapters dealing with the several morbid states, but it may be of interest to note how considerable is the space devoted to the secretory and other functional derangements which constitute the dyspepsias. In this department terminology is enriched by many new but not euphonious additions—"hyperchlorhydria," "gastrosuccorrhœa continua periodica" and "chronica," "achylia gastrica," and "ischochymia," the two latter denoting mainly the conditions formerly termed "gastric atrophy" and "gastric dilatation." Dr. Einhorn justifies the use of the term "ischochymia" on grounds which may be deemed satisfactory, for by it he implies a hindrance to the due emptying of the stomach, the stagnation of the contents of which is responsible for most of the symptoms of gastrectasia. There is a brief but sufficient account of enteroptosis and, finally, the nervous affections are succeeded by a chapter on Affections of the Stomach in other Diseases. The book is one which can be recommended for the clearness and conciseness with which the whole subject is treated and for its eminently practical character.

Tests and Studies of the Ocular Muscles. By ERNEST E. MADDOX, M.D., F.R.C.S. Edin. Bristol: J. Wright and Co. Pp. 427. 1898. Price 10*s.* 6*d.* net.

THIS work will be found to repay perusal. Without being of a controversial nature it is very suggestive and places many points in regard to the action of the ocular muscles in a new and interesting light. At the same time the author has contrived to give a valuable epitome of the work on this subject which has been done in this country and abroad, and especially in America, during the last few years. Many circumstances render inquiries into the functions of these muscles difficult. Their coördinated action is complicated and difficult to follow even under normal conditions, and in disease the difficulty is greatly increased on account of the symptoms being to a large extent subjective and therefore requiring close attention on the part of even the most intelligent patient.

The author commences with a short description of the ocular

muscles and their relations, which are exceedingly important, to the capsule of Tenon. In describing the actions of the ocular muscles he introduces some new terms which are useful since they abbreviate descriptions and are at the same time perfectly intelligible. Thus, the rotation of the cornea on its edge outwards like a wheel he describes as extorsion and the muscles which effect this—viz., the inferior rectus and inferior oblique—are termed "extortors," and so the muscles which rotate it inwards, the superior rectus and superior oblique, are intortors. He points out that the insertions of the several recti muscles form, as described by Tillaux, a kind of spiral, for beginning with the internal rectus and proceeding to the inferior external and superior recti in order they are attached at distances of 5, 6, 7, and 8 millimetres from the margin of the cornea. He endeavours to explain the existence of the pulley of the superior oblique by attributing it to the necessity of a contrivance for obtaining length, whilst its presence in association with the superior and its absence in the inferior oblique he believes to be due to our habitually looking downwards in our daily work.

The disposition and influence of the "check ligaments" are given in full detail and should be studied by all those who undertake to perform the division of the tendons of these muscles. A chapter is devoted to Motor Faculties, in which, without any particular novelty in their treatment, such subjects as the fixation of the eye, normal and abnormal projection, the perception of distance, and the stereoscope are dealt with. The succeeding chapters are devoted to Strabismus and Ocular Paralysis. In the treatment of the former the author quotes with approval Javal's course of treatment by means of regular exercise of the muscles. It must be acknowledged, however, that such exercises require great patience, that they take up a great deal of time, and are not always successful.

The eleventh chapter is devoted to Ophthalmoscopic Corneal Images and the mode of utilising them for the recognition of strabismus. Dr. Maddox gives a mode of ascertaining by means of the corneal reflexes whether or not a squint is paralytic which is of practical value. It is to this effect. The palm of the left hand should be laid on the patient's head with instructions to let the head follow the most gentle guidance of the hand without resistance. The exact position of the corneal reflex in the squinting eye is now to be noted, whilst the fixing eye is directed to the central aperture of the ophthalmoscopic mirror and the head is steadily moved in various directions. If the position of the reflection is unchanged the squint is concomitant; if it be changed the squint is paralytic. Priestley Smith's mode of strabismometry is described and the value of photography in the diagnosis of squint pointed out. We recommend Dr. Maddox's work to all who are practising ophthalmic surgery.

Atlas and Essentials of Pathological Anatomy. By Dr. O. BOLLINGER. In 2 vols. London: Baillière, Tindall, and Cox. 1898. Price 12*s.* 6*d.* each volume.

THESE two volumes form part of the Hand-Atlas Series published in German by Lehmann. In our previous notices of other volumes of the series we have commented on the excellence of the plates and the present numbers form no exception. The illustrations are most beautifully executed. The first volume deals with the Circulatory, Respiratory, and Digestive Apparatus, including the Liver, Bile Ducts, and Pancreas, and contains 69 coloured figures upon 60 plates and 18 illustrations in the text. It is impossible to speak too highly of the efforts of the artists and lithographers, nor would it be an easy task in the space at our command to draw attention to as many of the plates as we could wish; but we may mention as some of the best those depicting fatty degeneration of the heart muscle, chronic fibrous and calcareous endocarditis of the aortic valves, adenoma of the thyroid gland, diseases of the lung caused by inhaled dust, &c. The second volume considers the pathological anatomy of the urinary apparatus, sexual organs, nervous system and bones, and contains 63 coloured figures upon 52 plates and 17 illustrations in the text. In this volume again the various pathological conditions are reproduced with wonderful fidelity. Plate 10, showing a cystic kidney, and Plate 12, exemplifying chronic tuberculous pyelo-nephritis, are especially good.

At the end of each volume is a full account of the various pathological conditions figured arranged in a more systematic manner. The student will find this work a most valuable one as an aid to his pathological studies. It can hardly replace the ordinary text-books, but he will be well advised to add these volumes to his library and to constantly refer to them whilst reading his other medical and surgical works.

Atlas of Clinical Diagnosis and Internal Diseases. By Dr. CHRISTFRIED JAKOB. Authorised Translation from the German. Edited by AUGUSTUS A. ESHNER, M.D. London: The Rebman Publishing Company. 1898. 68 Plates and 64 Illustrations in the Text. Pp. 259. Price 12*s.* 6*d.*

THIS also is one of the Series of Hand-Atlases issued by the firm of Lehmann of Munich of which several have already appeared in English dress. The plan of the book consists in coloured plates containing in all 182 illustrations and in some text—which forms about one-half of the volume—treating of the methods of physical examination, and giving also a summary outline of internal diseases exclusive of those of the nervous system. The plates comprise microscopical drawings of the blood, sputum, and urinary deposits as well as the colour-reactions obtainable in testing the gastric juice and urine. Then come a large number of percussion outlines of normal and diseased conditions of the thoracic and abdominal viscera. All these figures are coloured and they tell plainly the conditions which they represent, and as they are all taken from actual cases, of which a brief outline is given on the page facing the diagram, they will be useful as guides to the clinical student in the art of graphic representation of clinical facts. Although such a book may not be really as useful as some of the other works in this series it affords a compendious insight into the methods of clinical investigation and should be welcomed as an addition to a field already occupied by many works of a more pretentious class.

Medical Diseases of Infancy and Childhood. By DAWSON WILLIAMS, M.D., F.R.C.P. Lond., Physician to the East London Hospital for Children, Shadwell, &c. London, Paris, New York, and Melbourne: Cassell and Co. 1898. 8vo. Pp. 626. Price 10*s.* 6*d.*

STUDENTS cannot complain of the lack of excellent manuals dealing with diseases of children. The latest, from the pen of Dr. Dawson Williams, will certainly not be the least popular among students and practitioners. Well arranged and clearly written, it embodies the experience of the author during many years at the Shadwell Hospital for Children. While indicating his own views very distinctly Dr. Dawson Williams gives adequate space to the teaching of others on points of pathology and treatment with which he is not fully in accord.

Commencing with a short chapter on the Hygiene of Infancy Dr. Dawson Williams goes on to give practical directions for the clinical examination and observation of infants and of older children. Diseases incidental to birth

are described, including such accidents as meningeal hæmorrhage from injuries during labour. A somewhat short chapter is given to the Feeding of Infants. Like most other authorities Dr. Dawson Williams recommends diluted raw cow's milk when its purity and freshness can be guaranteed. In other cases he gives directions for pasteurising or for absolute sterilisation. This chapter scarcely goes far enough, dealing only with feeding during the first six months and containing little guidance for the very important transition period before the child is fully equipped with teeth.

The section dealing with the acute specific fevers is very well done, particularly the chapter on Diphtheria, where there is an excellent concise account of the bacteriology of the disease and of the results of treatment with antitoxin. Curiously, however, no practical directions are given for the clinical bacteriological examination of a doubtful case. The statistics quoted show very conclusively the importance of giving antitoxin early, the mortality not being greatly reduced when it has been delayed till the fifth day of the disease.

Tuberculosis receives full attention and is followed by one of the best chapters in the book, that on Inherited Syphilis. Referring to the possibility of direct infection of syphilis by vaccination Dr. Dawson Williams believes that most alleged instances are cases of inherited syphilis and holds that "no case can be admitted to be an example of syphilis due to inoculation at vaccination unless a primary chancre be discoverable." The account of rickets is somewhat condensed for so important and common a disease.

Diseases of the various systems of the body are described shortly in their turn. A very full and well-illustrated account is given of the acute gastro-intestinal affections of infancy, including a full notice of the recent researches of Professor Baginsky of Berlin. Cretinism is well described, but there is little mention of other forms of mental defect the recognition of which in early life is often as important as it is difficult. Dr. Dawson Williams adheres to the restricted view of rheumatism as a disease of joints rather than a general condition. Although he puts the chapter on Chorea next to that on Rheumatism instead of among nervous diseases he is by no means clear that it is "merely a rheumatic manifestation." His chapter on Rheumatic Fever describes rheumatism rather as it occurs in the adult, but it fails to take account of the slight afebrile rheumatism so often seen in young children which has been so well described by Dr. Cheadle. The book is very complete, containing notices of rare conditions such as the hæmoglobinuria of the newly-born, and also excellent chapters on Malaria and Hydatid Disease, in which Dr. Manson and Mr. Twynam have coöperated.

The book is very well illustrated by reproductions of clinical photographs and photo-micrographs and there is a very full index. It forms a worthy member of the practical series published by Messrs. Cassell and Co., and its convenient size, its completeness, and the excellence of its teaching enable us to recommend it strongly as a trustworthy manual for students and practitioners.

LIBRARY TABLE.

First Aid to the Injured. By Dr. FRIEDRICH ESMARCH, being Six Ambulance Lectures Translated from the German by H.R.H. Princess CHRISTIAN. Sixth edition. London: Smith, Elder, and Co. 1898. Price 2*s.*—*First Aid to the Injured and Management of the Sick.* By E. J. LAWLESS, M.D. Brux., D.P.H. London: The Scientific Press, Limited. 1898. Price 3*s.* 6*d.*—Of these two little books the former is the more elementary, containing practically only such information as may be rightfully made use of by any bystander who has a head on his shoulders. Dr. Lawless's book gives drill instruction for stretcher-bearers and certain information as to field and camp hospitals. Professor Esmarch's book is written with all that emphasis and clearness which those who know that admirable work of his, "The Handbook for the Treatment of the Wounded in War," look for from him. There is only one point to which we take exception, and that is the statement upon page 31 as to the use of the carbolic spray in operations. Surely, this has been altogether given up. Otherwise we have nothing but praise for this work, and the section upon nursing is of special excellence. The translation, so far as we can tell without having compared it with the original, is well done—i.e., unless we knew it were translation we should not think it was. Dr. Lawless's book goes upon much the same lines, only it deals in addition to first aid with such subjects as instruction camps for volunteers, the duties of hospital orderlies as sick nurses, cookery for the sick, and the like. With regard to the making of coffee Dr. Lawless allows two teaspoonfuls of coffee to three-quarters of a pint of water. This may make an infusion suitable for the sick, but to call it coffee is a misnomer. On other points Dr. Lawless's book is admirable; more especially we may note the sections dealing with Life in Camp, How to Manage on the March, and the Appendix—Fresh Air and Ventilation.

Clinical Lectures on Diseases of the Heart and Aorta. By GEORGE WILLIAM BALFOUR, M.D. St. And., LL.D., &c. Third edition. London: Adam and Charles Black. 1898. Pp. 479. Price 12*s.* 6*d.*—Few words are needed to introduce this fresh edition of a well-known work to the notice of our readers. When the lectures first appeared twenty-three years ago they at once attracted attention from the style in which they were written, the wealth of clinical material they contained, and the sound doctrines they imparted. Dr. Balfour's reputation stands high in the department of cardiac diseases and medicine owes to him many valuable hints and wise reflections. The lectures, too, are just those which may have been given at the bedside. Each one is furnished with the records of cases which serve to illustrate the text and point to the enforcement of rules of treatment. The purely clinical descriptions are preceded by two lectures on Diagnosis, which convey in clear language the significance and theory of production of the various physical signs. Dr. Balfour treats of subjects which are most likely to lead to erroneous inferences, and none can peruse the lectures on Curable Mitral Regurgitation, on the Vanishing and Variation of Cardiac Murmurs, or that on the Simulation of Aneurysm without being instructed and assisted in practice. Indeed, this work is eminently suited for the careful perusal of the practitioner, who will gain from it much that is useful to him in matters of diagnosis and treatment, and will, moreover, be enabled to judge more accurately as to the probable course and duration of cases of valvular disease, and often, mayhap, to take a more hopeful view of their prognosis. For to arrive at a right judgment in any case of heart disease many points have to be considered and the least important frequently is the presence of a murmur. This and more is the lesson conveyed by Dr. Balfour's sensible teaching, based as it is upon years of observation and experience. We heartily welcome this new edition of a much valued book.

Rheumatoid Arthritis: its Pathology, Morbid Anatomy, and Treatment. By GILBERT A. BANNATYNE, M.D. Glasg., M.R.C.P. Edin. Second edition. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent and Co. 1898. Pp. 182. Price 7*s.* 6*d.*—The subject to which the author of this book has devoted much study is one that has long formed a sort of debateable ground amongst pathologists and clinical observers. Many and various have been the doctrines put forward to explain the etiology of this

slowly progressive, painful, and crippling disease that seems to occupy a place apart in nosology. Dr. Bannatyne himself is persuaded that the key to its pathology is to be found in ascribing it to microbic agencies, and strange as it may seem at first sight to refer a chronic disorder of this class to such a cause he makes out a fairly good case in support of his contention. Readers of THE LANCET are familiar with his views, and the fact that his work has reached a second edition is proof that his mode of presentation of the subject has been received with favour. The clinical portions of the book are well written, the salient facts and the variations met with being very systematically treated. Numerous illustrations, including some interesting Roentgen photographs, add to the value of the text. In point of treatment the author finds in the creasotes, phenols and naphthols remedies which act by virtue of their bactericidal properties and thus harmonises their employment with the pathological doctrines which he holds. The value of thermal treatment in the more chronic stages is insisted on and of this the author's experience of the Bath waters enables him to speak with authority.

Zig-Zag Ramblings of a Naturalist. By R. TAYLOR MANSON, L.R.C.P. Edin., M.R.C.S. Eng. Second edition. Darlington: William Dresser and Sons. 1898.—This is a collection of very charming essays dealing with the natural history of a portion of that country of which Kingsley so well says:

"The name of the place is Vendale, and if you want to see it for yourself you must go up into the High Craven and search from Bolland Forest north by Ingleborough to the Nine Standards and Cross Fell, and if you have not found it you must turn south and search the Lake Mountains down to Scaw Fell and the sea; and then if you have not found it you must go northward again by Merry Carlisle and search the Cheviots all across from Annan Water to Berwick Law; and then, whether you have found Vendale or not, you will have found such a country and such a people as ought to make you proud of being a British boy."

This country is perhaps fuller of romance than any other part of England, save possibly portions of Somerset, Gloucester, and Cornwall, and Mr. Manson writes as one who not only knows it but loves it. His derivation of the jeweller's "heart" charm from the flint arrowhead is certainly a plausible one, though we do not remember ever to have seen it noted before. In the chapter called "Our Park" Mr. Manson discourses pleasantly about the differences between the leaves of the beech, the elm, and the hornbeam. The leaf of the last-named is sometimes mistaken for that of the beech, but they are not much alike. Still there is often a difficulty in distinguishing between the leaves of the wych elm and those of the hornbeam, that is to say, unless they be examined together. Neither tree is very common in England, but there are twelve magnificent hornbeams at Temple Lock on the Thames, and there used to be, and we trust still is, a gigantic wych elm in the park at Magdalen College, Oxford. Both town and country dwellers should read Mr. Manson's essays, for both will, or should, profit by them.

New Inventions.

AN ANATOMICAL URETHRAL BOUGIE.

BOUGIES and catheters mapped out to correspond with the anatomy of the male urethra, so as to indicate the situation of strictures or other abnormalities, have been made for me by Mr. Alfred Cox of 108, New Bond-street. An ordinary bougie is encircled with a red line six inches from its extremity, which six inches when passed into the urethra inform the operator that the point of the instrument is about entering the membranous portion. The next three-quarters of an inch of the instrument is marked off with another red line, and as it is being passed the extremity of the instrument is making its way into the prostatic portion, after which the passage of the next marked part—viz., 1¼ in.—tells that the prostatic portion is occupied and that the instrument is about to enter the bladder.

RALPH STONEY, L.R.C.S. Irel., &c.

Gloucester-terrace, S.W.

THE SOUDAN CAMPAIGN.

(FROM OUR SOUDAN CORRESPONDENT.)

THE number of cases of sick and wounded under treatment in this hospital to-day is 139, of which 111 are cases of wounds, gunshot and otherwise, which may be classified as follows: gunshot, 78; sabre and spear, 17; and other wounds, 16. This does not include the 6 wounded officers. The other cases are principally fever (including a few enteric) and dysentery. On the whole, the wounded are doing very well and it is contemplated sending off a sick convoy to Cairo at an early date. The worst cases are those of gunshot wounds of joints, of which luckily there are not a great number. Up to date about 22 operations for the removal of bullets and the suturing of tendons, &c., have been performed, and, thanks to the x rays, the surgeon's work has been much simplified. As I stated in my last letter we have two excellent apparatus, one for a 10 in. spark and one for a 6 in., and they have proved of great service. The bullet wounds were nearly all caused by Remingtons and the amount of splintering of bone has necessarily been great, the only exception that I have noticed being the case of Lieutenant-Colonel Sloggett of the Royal Army Medical Corps; in his case the aperture of entry was one-eighth of an inch above the left nipple and that of exit in a direct line from before back, a little to the outer margin of the axillary border of the scapula. This wound was undoubtedly inflicted by a small-bore French or Italian rifle (to which, in my opinion, Lieutenant-Colonel Sloggett owes his life), as, with the exception of severe shock at the time, accompanied by a high temperature for a few days and slight dyspnœa, his symptoms have never been urgent and I am happy to say that he is gaining ground daily, the consensus of opinion being that the bullet undoubtedly perforated the chest and made its exit at the point described. The other wounded officers are doing well, though the sabre wound of Lieutenant Nesham of the 21st Lancers is a very severe one and had divided all the tendons of the wrist and the median and ulnar nerves. These have been successfully sutured. Of the amputation cases the one at the shoulder joint (for a railway injury) died from shock and exposure to the sun as the patient lay beside the line for some hours before he was discovered, and the only other case up to date, that of an arm at the middle third, is doing well. There is a rumour that the Red Cross Society have prepared a boat to take the wounded from Assouan to Cairo[1] and I can only hope that it is so, as they will benefit more by this route than by the intensely hot, jolting, and dusty journey by train. I cannot conclude this note without expressing how much we were struck on arrival here from the front by the excellent arrangements and order so prominent in this hospital, and it must have been a most welcome change for the wounded after all the discomforts inseparable from the journey down from the front by boat to have been able to occupy the airy and comfortable wards fitted with all the comforts of a hospital in Cairo.

Hospital on Line of Communication, Abadia, Soudan,
Sept. 11th.

[1] We announce in another column that the *Mayflower* left Assouan for Cairo on Sept. 15th with 23 wounded and 24 sick.—ED. L.

BRITISH ASSOCIATION.—At the concluding meeting of the British Association, held at Bristol on Sept. 14th, Professor Schäfer reported that the grants appropriated to scientific societies amounted to £1485, and added that this unusually large amount was able to be given owing to the great success of the Bristol meeting.

THE LANCET.

LONDON: SATURDAY, OCTOBER 1, 1898.

IN studying the life of PASTEUR on one can fail to be struck with the practical bearing of all his investigations and with the eagerness with which he set himself to improve the industries of the districts in which he happened to be placed. His brilliant investigations upon the diseases of silkworms, upon vinegar, upon the diseases of wine and beer, and upon sewage fermentation are matters of history. He was essentially a patriot and a citizen who delighted to place his knowledge at the service of his country and of his town. Yet we are quite familiar in this country with the criticism that our centres of learning, our universities, are not in touch with the industries of the community in the midst of which they exist. We receive an impression that the teaching of anything technical does not appertain to a university. What has been the result of this old university idea? It has been that the manufacturing chemist has established a laboratory in his own works, a well-equipped research laboratory, the investigations in which are turned to his own profit. The same may be said of the brewing industries. If the seats of learning have not appreciated "technical" education the manufacturers have done so in numerous instances. Instead of the great cities in this country possessing universities of their own in which the student could be trained for a classical, a medical, a legal, a veterinary, or a commercial career, or be thoroughly equipped as a chemist, a brewer, an agriculturalist or a commercial man, we find too often in these cities an apology for a seat of learning in which, perhaps, the only flourishing section is medicine, the other subjects requisite to the life of the citizen being neglected and the great manufacturer of the district in consequence being driven to establish a laboratory exclusively for his own use. The changes which are, however, taking place in Liverpool and in Birmingham, to be probably followed by Bristol and Sheffield, indicate a commencing reaction against the old university system and a determination to found centres of learning more in touch with present-day needs, where research and learning may be prosecuted in a scientific manner and in well-equipped laboratories, whether the subject is butter-making or the study of tropical diseases.

What better indication could we have of the determination to apply scientific methods to commerce than the interesting meeting which was held at Lord VERNON'S country seat on Sept. 15th and reported in THE LANCET of Sept. 17th? It was a gathering of scientific men to see the establishment of a laboratory in connexion with a dairy—a laboratory in which the quality of the milk could be tested regularly, chemically, and biologically, and in which researches on the bacteria present in milk could be conducted. If the chemist or the brewer has found it profitable to establish his own laboratory surely it is a step forward on Lord VERNON'S part and one which is likely to yield much good fruit and have far-reaching effects if the noble lord proceeds on similar lines. It is perfectly certain that perishable food-stuffs, whether dairy products, meat, or jams, when dealt with in large quantities, would yield far greater profits if those who had to deal with them possessed a scientific knowledge. This becomes strikingly apparent if we consider the amount of good food assuredly lost through want of knowledge of biological laws: the jam manufacturer loses half his preserves, a cargo of meat is spoiled, firkins of butter turn out rancid, the milk becomes quickly sour, and so on. Lord VERNON'S effort deserves the greatest praise, although it might cause our Danish friends or American cousins to smile, so used are they to what we must treat as a radical departure; and we hope his example will be followed. His cows are hygienically housed, they are all tested with tuberculin, and the milk is carefully centrifugalised. A further feature is the placing upon the market of sterilised milk. This is most certainly a great desideratum as far as our experience goes. Sterilised milk, even when three or four weeks old, tastes very like fresh milk, and we cannot help thinking that, after all, boiled sterilised milk bears the same relationship to fresh milk as, say, roast beef to raw beef. There is no doubt the raw beef has its value, but no one denies the nutritive use of roast beef, and it is probably similarly the case with boiled milk.

To return to the university question, Lord VERNON'S experiment shows the necessity for better and more scientific agricultural departments than at present exist in the country and that it is incumbent upon the teaching colleges in agricultural districts to make provision for laboratory training. We hope the lesson will not be lost upon our teaching bodies and that they will not allow the matter to be left to individual enterprise. Municipal bodies have become quite alive to the fact that the questions of milk-supply and of water-supply are exceedingly important and developments in technical knowledge are now sure to follow. Let the universities be ready to lead. Liverpool and Manchester have their bacteriological as well as their chemical analyst and other large cities will no doubt follow suit. We deal with the present position of London in relation to a public bacteriological laboratory in another article. That official supervision of the milk-supply is necessary is shown by the fact that from 2 per cent. to 5 per cent. is the frequent average of tuberculous milks. The tuberculous milk is more frequently milk brought into the city from the country and is obtained from cows in shippons which cannot be inspected by the city authorities. Lord VERNON'S example is therefore of great service to other producers and helps further to protect the consumers in the large towns.

IN a communication from a correspondent published in THE LANCET of Sept. 24th, p. 819, a most important question is raised — the possibility of making arrangements for the appointment of an expert or experts who would be available to carry on examinations of material from suspected cases of infectious disease specially with

a view to afford aid in diagnosis. The necessity for such arrangements being made in connexion with the maintenance of the health of a city like London has long been demonstrated, but the best method of carrying them out has still to be carefully considered. The value of well-equipped and well-manned laboratories has now been most fully recognised in New York, where Dr. SHERMAN BIGGS, the director, has at his command a staff of scientific workers who might well bring credit to any institution. He also has such a laboratory and clerical staff that he is enabled to leave his scientific workers free to carry on their special duties and at the same time to keep record of, and make public in a readily accessible form, the results of the investigations carried on. He is enabled to do all this because he has a free hand and is well supplied with the sinews of war—a sum of nearly £30,000 passing annually into, and out of, the coffers of the laboratory department. How much can be done on a small scale has already been demonstrated in this country, where the Clinical Research Association has afforded very great assistance to private practitioners, whilst to vestry and district boards and the Metropolitan Asylums Board the British Institute of Preventive Medicine and the laboratories of the Royal Colleges of Physicians of London and Surgeons of England have done work the value of which can at present be very inadequately estimated. In Manchester Professor DELÉPINE, working in conjunction with Dr. NIVEN, has organised in the Owens College a system of laboratory investigation which promises to effect a complete transformation in the character of the work of the Health Department in the Manchester district. Liverpool in the same way now utilises the services of Professor BOYCE and his staff, with the result that the medical officer of health, Dr. HOPE, has always at his disposal the best bacteriological and pathological advice to be obtained. In this matter Manchester and Liverpool have followed the lead of such cities as Paris, Berlin, and Lille, where there appears to be a definite arrangement between the municipal authorities and the great pathological and bacteriological institutes by which the former obtain the benefit of the use of the laboratories and workers in the institutes and the latter receive substantial subsidies through the aid of which they are enabled to become vastly more efficient than they could otherwise hope to be.

It would be well that all these various plans should be carefully considered before any step is taken or any scheme put forward which is not based, first, on the needs of the city as a whole, and second, on the feasibility of its adoption and carrying out. The first point at present requires little consideration. The work to be undertaken is already of such magnitude, both as to quantity and character, that search for it is absolutely unnecessary. The second point, however, is one which requires more careful consideration and it is well that it should be taken up at once, as no more favourable opportunity could have arisen.

One important aspect of the matter to be carefully considered is that there are in London at the present time two large institutions, built and supported at considerable cost, in which, were funds at the disposal of the managers, the whole work of a central department could be carried out at an earlier date, more efficiently, and at probably half the cost to the ratepayers, than were an entirely new laboratory to be erected. It is possible that one or both of these institutions may be included in any complete scheme which is adopted by the London University Commissioners, so that ere long they would be in touch with a body on which the London County Council will, if a forecast may be made, be represented. These two institutions—the laboratories of the Royal Colleges of Physicians of London and Surgeons of England on the Victoria Embankment and the British Institute of Preventive Medicine at Chelsea—are, we believe, both well equipped for the carrying on of such work as that referred to in our correspondent's communication and, so far at least as the funds at their disposal have enabled them, have for some years been engaged in carrying on some of the work elsewhere undertaken by public laboratories. At present the only obstacle to the carrying out of the whole programme outlined in our columns is that there are not sufficient funds at the disposal of the managing authorities for the payment of such a staff as would be required, which could only be collected slowly and educated as found necessary. At both places there is already the nucleus of such a staff, a nucleus which could readily be added to as occasion might demand.

In a movement of this kind it would be a grave mistake if the main aim of the foundation of such a central department were lost sight of and money were frittered away on any scheme which might in time become obsolete. It should be understood from the outset that no laboratory in which mere diagnostic work is undertaken could have the slightest chance of permanently fulfilling the functions required of it. That being the case, it is obvious that the staff must be so large that those engaged in doing the diagnostic and other routine work should have time and opportunity for carrying on original scientific work by means of which they may not only keep abreast of what is going on around them, but have the opportunity of utilising the wealth of material which would be focussed in such a department and of giving forth the results of their investigations for public use. Without the stimulus of original investigation there will always be a tendency for anyone carrying out merely diagnostic work to fall into routine methods and to become a mere drudge whose assistance, though sufficient for the immediate end in view, must inevitably become less and less efficient as time goes on and new discoveries are made. It is an almost universal experience that routine scientific work soon loses its character unless the stimulus of one of two occupations be constantly applied. The first of these, teaching, the delight of some men, is little more than boredom to others, whose bent is rather towards original investigation, but a combination of men who, in addition to conducting teaching or research work, should be called upon to supervise diagnostic work and investigate complicated pathological and bacteriological problems would result in the carrying on of an ideal work in this great city of ours.

It must be borne in mind that the work of a laboratory of this kind would in the course of a few years cover an enormously greater extent of ground than it at present does and that the tendency would be for more and more problems to be brought there for examination and solution, whilst the amount of routine work would probably increase

at an even greater rate than that of a more complicated nature. Consequently any plan at present adopted would have to be of such a plastic and elastic form that under proper guidance it might be moulded or expanded to meet all requirements as they arise. Matters stand, then, much in the following position. There is need for a great central department for the investigation of pathological and bacteriological problems and for assisting medical men in diagnosis by microscopical and cultural methods. Such a department must obviously be in addition to smaller local laboratories, where much of the routine work which requires little special experience may be carried on by men who wish to acquire facility in any diagnostic methods before they commence their final clinical work, in order that such methods may gradually become part of their clinical "outfit." This department must be placed on such foundations and constructed on such a plan that there shall be ample room for later expansion.

The basis of such a department already exists in the buildings and "skeleton" staffs of the laboratories of the Royal Colleges of Physicians of London and Surgeons of England and the British (or Jenner) Institute of Preventive Medicine, which between them could certainly supply all the laboratory room necessary for carrying on (*a*) diagnostic, (*b*) experimental, and (*c*) teaching of training work requisite for the ultimate success of a central department. There would be the great advantage that the work could be commenced at a very early date after the necessary arrangements as to control, management, staffing, &c., had been made. The initial or capital outlay might be looked upon as likely to be very small indeed, whilst an annual outlay of a comparatively small sum would in the first instance ensure such additions to the present staffs as would be ample for existing needs, and only as the needs became greater and the system developed on natural and demonstrably useful lines would greater outlay be called for.

One of the great obstacles to the carrying on of systematic investigation is the difficulty which exists in obtaining sufficient funds for the payment of capable workers. The result is that splendidly equipped laboratories have to depend in great measure for their utilisation on what may be called volunteer workers, men who have all the devotion and enthusiasm necessary to become good workers and who carry to successful conclusion many most valuable investigations, but who are hampered in so doing by the fact that having a living to earn they cannot devote their whole time and undivided energy to the kind of work involved in these researches. Under some central and controlled scheme, taking in the two large laboratories above mentioned and others as might be deemed necessary, this obstacle could be easily and finally removed. Men could give half their time to carrying out routine work of examination and diagnosis and would be able with the pay received for that work to devote the remainder of their time to teaching or to scientific investigation or both, by means of which they would keep themselves well up to date and thoroughly efficient.

The present seems to be an opportunity not to be lightly thrown aside, and it is to be hoped that the example set by Edinburgh, Manchester, and Liverpool will not only be followed but improved upon, and that the facilities for carrying on work already in existence may be utilised in a greatly extended form. An annual subsidy under certain control and conditions, divided by arrangement and set apart for the payment of expenses and salaries incurred for the carrying on of diagnostic work, would not only enable such work to be done, but would also increase in a most marked degree the efficiency of the functions for the performance of which these laboratories were originally designed, and all this at a cost which, compared with the equipment and staffing of new laboratories, would at first be little more than nominal to the bodies interested in this new movement. The gain to the health authorities on the one hand and the benefit to science on the other would, we believe, be simply incalculable. London has moved late and slowly in this matter. It is to be hoped that now the movement will be well directed and thoroughly effective.

WE publish in another column the gist of an address by Dr. J. C. MCVAIL, the medical officer of health of Glasgow, which he delivered as President of a Conference of Medical Officers of Health held in Birmingham on Wednesday last in connexion with the annual meeting of the Sanitary Institute. Dr. MCVAIL chose for the opportune subject of his remarks "The Medical Profession and the State: their Relationship, especially with regard to Vaccinal Legislation," and dealt with his theme in the well-informed, lucid, and bright manner which he has accustomed us to expect from him. In addressing an audience of medical officers of health over 1000 of whom have recently testified by signed declaration their conviction that vaccination and revaccination prevent and control small-pox and that small-pox cannot be effectually prevented and controlled without these means it need hardly be said that the speaker was not obliged to waste time in urging the value of the procedure. Nor did he consider himself called upon to criticise in any detail the merits or demerits of the new Vaccination Act. This Act has no mention of revaccination, an omission which must to some extent condemn it in the minds of the authors of the representation affirming the enormous protective value of revaccination. But Dr. MCVAIL judiciously refused to condemn the Act either because of this omission or because of the abolition of the compulsory element. On the contrary, he warned his hearers against making up their minds too speedily as to what the outcome of the new legislation will be, and this, we think, was wise advice. It must be remembered that under the old system vaccination had come to be, as Dr. MCVAIL happily styled it, "a matter of local option," while it is within the knowledge of all medical men that where the feelings of the community went against the treatment no real pressure was brought to bear against the individual who broke the law. The law was to an appreciable extent in abeyance when Mr. CHAPLIN'S Act was passed, for in many districts the boards of guardians to whom the starting of punitive proceedings had been entrusted under the old law declined to take any step. But under the new Act the Local Government Board may be expected to see that the letter of the law is complied with and that parents who desire to avail themselves of their new right to withhold their children from vaccination do so only

in accordance with prescribed form. "In fact," says Dr. MCVAIL, "individual option will take the place of local option," and we agree with him in thinking that it would be rash to prophesy that under the new system the vaccination default will be any greater than it was under the old. Certain vulgar inducements to keep children back from vaccination are now wanting, and with the present lack of opportunity to snatch a cheap martyr's crown will come a decrease in the number of persons who resist vaccination unthinkingly and at the expense of their infants' lives for the sake of what they can get out of their pose as the victims of oppression. That most conscientious thinkers will range themselves for the future, as they have done in the past, on the side of medical opinion, is certain; but it is also probable that a large proportion of the community who have hitherto allowed themselves to be led by false prophets will now pause, think, and return to the fold. The absurd statements made recently by "conscientious objectors," on which we comment immediately below, cannot fail to reveal the position of the average anti-vaccinationist as somewhat absurd.

THE conscientious objector has passed from the purview of the Legislature into that of the magistracy, and the rapidity with which he has been hustled from the high court of Parliament into the humbler law courts has caused him to arrive there in a somewhat dishevelled and non-descript condition. So insufficiently, indeed, was he described and labelled before being despatched that there has been some difficulty in recognising him on his arrival, and in various instances the bench, denying his right to use the name which he claims for himself, has sent him away uncertified and dissatisfied. At Lambeth Court he declared his objection to be that vaccination is unnecessary and inefficient; but he added that he would be quite willing to have his child vaccinated if he believed in the efficacy of the operation. The magistrate refused to accept this and told the man to go home and make further inquiry. The same advice was given to a North Londoner who "had heard" that calf lymph sometimes develops consumption. The magistrate here adopted the Socratic method, thus: "Mr. MEAD: What do you do when you are ill? Applicant: Go to a doctor.—Mr. MEAD: Why do not you cure yourself? Because the doctor is skilled in his profession.—Mr. MEAD: If you have confidence in the medical man in one case, why not in another? You had better go away and reconsider the matter." Another applicant averred that he himself had been vaccinated half-a-dozen times, but only once successfully, and though he would not allege that this had done him any harm he complained, "It put me to a lot of trouble." This man also was sent away empty-handed.

Sometimes the objections have been of a religious nature. One man argued at Greenwich "that the child is made in the image and likeness of GOD" and that "it was not meant that GOD'S skin should be cut about." An amateur theologian of Birmingham declared that "if it were necessary for man to be inoculated by beast" the Creator would have done it before the child was born. The magistrate's clerk held that this man might as well expect the Creator to provide him with pocket-handkerchiefs. In the end, however, the required exemption was granted. These objectors belong to the class who opposed small-pox inoculation in Lady MONTAGU'S time on the ground that it tended to "banish Providence out of the world," and to the early opponents of vaccination who held that JENNER'S scheme was "perhaps a daring violation of our holy religion" and that "it was impious and profane to wrest out of the hands of the Almighty the Divine dispensations of Providence," small-pox itself being "a merciful provision on the part of Providence to lessen the burthen of a poor man's family."

At Hampstead the guardians' clerk was himself an objector and here the magistrate—Sir HENRY HARBEN—felt so much difficulty that instead of certifying "We are satisfied that he has such conscientious belief," all the length he would go was "We have no reason to doubt." The applicant then betook himself to the guardians whose clerk he is and requested them to obtain at the public cost counsel's opinion as to the validity of the certificate. His request was not granted and, according to the newspaper reports, the chairman remarked that "if anyone wanted encouragement for a series of fads in the parish he had only to point to the action of their clerk." Perhaps the most reasonable of the objectors was one who declared before Mr. SHEIL, "Well, sir, I lost one child, I thoroughly believe, through vaccination, and I do not wish to run the risk with a second child, not a very strong baby." Mistaken as this parent in all probability was, yet his declaration might well be classed as conscientious. In some other cases a vague general statement that vaccination has a prejudicial effect upon health was accepted as sufficient. There is no doubt that magistrates have been placed in considerable difficulty by the want of definition of the phrase "conscientious objection" in the new Act and by the duty which is laid upon them of "satisfying" themselves that there is conscientious objection. One point which seems to be agreed on by the London magistrates is that testimony upon oath is unnecessary. That is surely unfortunate, as a declaration relating to the health and life of a human being should be made with all the seriousness and solemnity which the forms of the law can provide. The fee of a shilling which is to be charged for a certificate will, we expect, be denounced as the indirect imposition of a fine, but it should be useful in so far as it may act as a deterrent to some who might otherwise be objectors, and if there is anything in this view it indicates how small a part conscience may play in the matter.

In the absence of definition it is likely that magistrates will attach more and more importance to the fact that a man is willing to lose half a day's work in order to get rid of the need for procuring the vaccination of his child. In that case a decision by Mr. MEAD at the Thames court is of very considerable practical importance. The mother of the child applied for a certificate of exemption. Mr. MEAD asked if she had a husband and the reply was, "Yes; but he can't lose a day's work to come here. It makes no difference whether he or I come," to which Mr. MEAD answered, "Yes, it does. If I give a certificate it must be to the responsible guardian of the child." This is as it ought to be, and we trust that every bench of

magistrates will follow Mr. MEAD'S clear-headed example. It is, of course, much too early to attempt to form any definite opinion as to the effects of the new law or the extent to which recourse will be had to the conscience clause. The action of those boards of guardians which, owing to the want of a conscience clause, have of late refused to administer the Act will be watched with special interest, but some time must elapse before the boards all over the country can be expected to elaborate the details of their procedure under the new system.

Annotations.

"Ne quid nimis."

SOME POINTS IN THE LONDON WATER-SUPPLY.

IT is possible that the present distress occasioned in the North-east areas of the metropolis by the unprecedented drought will do more towards hastening a better state of things in regard to London's future water-supply, its quality, quantity, and administration, than any other event could possibly have done. This is not the first time that the portion of the population of London which is now suffering from a scanty water-supply has been placed in the trying situation in which it finds itself. The Lee as a source of supply has failed under conditions which it must be admitted are exceptional, but it has failed before under less trying circumstances and no margin can be allowed on the question of providing life's first necessity. It remains to be considered whether, taking the sources of supply as a whole, the London watershed can be regarded under all conditions as adequate to the needs of a rapidly growing population. It is said that the other large water companies are not feeling so far any serious effects as a result of the drought, for some of them have enough water to spare, it appears, to relieve the shortage of the East London Waterworks Company. It seems clear, however, that up to the time of the present distress there was practically no provision made by which the mains of one company could be connected with those of another. As will be seen by reference to our Special Commissioner's articles, the East London Waterworks Company has two connexions with the mains of the Grand Junction Company, which company has also a connexion with the Southwark and Vauxhall Company. Recently a main was completed which joined the Kent system with the East London system and further, a junction has been made with the Southwark and Vauxhall Company through the Tower Bridge subway, which together will yield an auxiliary supply of 6,250,000 gallons per day. Other direct means of adding to the supply do not appear feasible, but the West Middlesex Company may join their mains with those of the Grand Junction Company, which will maintain the supply thus indirectly to the East London Company. This, according to Mr. Chaplin, will give an additional million gallons of water, but the connexion cannot be effected for some weeks yet to come. Thus it is estimated that a deficiency of 15 millions of gallons will be partly met by some 12 millions of gallons from these supplementary sources. Mr. Chaplin's comprehensive reply to a deputation representing the districts supplied by the East London Company on Sept. 24th may be taken almost as a declaration of policy, affording, we think, a glimpse at any rate of the attitude which the Government may be expected to adopt in relation to the entire question. He seemed to foreshadow the creation of a central administrative body. He was not content to restrict himself to the water famine in the East-end, for he touched also with no uncertain sound upon the greater questions of new administration, of municipal purchase, and of the scope of the Royal Commission presided over by Lord Llandaff and the probability of the Government dealing promptly and decisively with the matter. It will be admitted that Mr. Chaplin's review of the situation in the East-end of London was perfectly correct. The East London water-supply, he said, had failed on account of an abnormally low rainfall. In other words, the Lee is not equal to the demands of the two great water companies, and the New River Company drawing on the upper reaches of the river has so depleted it as to leave little to flow to the intakes of the East London Company in the lower reaches. The New River Company also derives a large supply of water from wells, upon which, however, the drought is having a very serious effect, so that it may not be convenient to them to sell water to another company for an indefinite period. The minor wells in the neighbourhood have practically disappeared as a source of local supply. This fact introduces a very important element into the question of London water-supply. Those living in the area immediately outside London not unreasonably contend that they should have a voice in the matter relative to the management of the supply, which could not be the case if the new administrative body were composed exclusively of representatives of the London County Council. The deputation urged upon Mr. Chaplin to convene an autumn session of Parliament in order to give the subject full discussion while the present situation was fresh in everybody's mind, but Mr. Chaplin expressed the opinion that an autumn session would be futile, while it should be remembered that the Government was waiting for the results of a practical Commission of Inquiry, that being now held by Lord Llandaff. Putting aside the great questions of policy in the matter of purchase and control it is obvious, we think, that the first step which legislation must take will be the establishment of a system by which the mains of all the different water companies in London could be instantly connected in the event of emergency at any one point. This cannot be a matter involving any large scheme of engineering, and if what has already been done had been done sooner, it would have saved the East-end of London from much hardship and distress. Upon this very important point, to which Mr. Chaplin so emphatically referred, the recent inquiry undertaken by ourselves as to the machinery, plant, and distributing services of the London water companies[1] should afford information of a very pertinent character.

SCHOOL BOARDS AND THEIR MEDICAL OFFICERS.

THE Halifax School Board had a meeting on Sept. 19th when the following report of the committee regarding the duties and remuneration of the medical officer was presented:—

"Reporting as to the duties of the medical officer to be appointed by the board the board in committee recommended that they should be as follows:—'(1) To examine when required by the board or the school attendance committee children who are said to be physically unfit to attend school and all children whom it is proposed to send to the "special" classes, and to make out certificates; (2) to examine probationers and candidates for pupil teachership, also pupil teachers at the end of the second year of their apprenticeship, and to make out the certificates required by the Education Department; (3) to visit and report in writing when required by the board or any of its standing committees on any employé who is absent from

[1] THE LANCET Special Commission on the Metropolitan Water-supply: THE LANCET, vol. i., 1897, passim.

duty on account of illness; (4) to examine candidates for employment under the board or employés when required by the board or any of its standing committees, and to make out certificates; (5) to examine and report upon cases of blind and deaf children when required and to make out certificates; (6) to visit each department not less than once every three months, or oftener if required, and report in writing on any sanitary defect of the premises to which his attention may be called and on the general health of the scholars; (7) at such periodical visits to examine and test the eyesight, hearing, or other physical condition of any scholar to whom attention may be called by the head teacher.' It was further agreed, 'That the remuneration for the foregoing duties be 75 guineas per annum, the engagement with the board to be for a period of one year.'"

The Rev. Father Quinlan moved, and Mr. Robertshaw seconded, the adoption of these proposals. Mr. Bates moved as an amendment that the salary should only be 50 guineas, and Mr. Braithwaite seconded. The Rev. Father Quinlan said that he did not consider the appointment of medical officer necessary. If, however, they were going to have one he personally would give him a much bigger salary than 75 guineas. Eventually 5 members voted for the motion and 5 for the amendment and the chairman gave his casting vote for the amendment. Another amendment was then moved to refer the matter back to the next meeting of the board and this was carried. Considering the amount of duties the medical officer may be required to do 75 guineas is none too much; in fact, we consider it quite inadequate. The sum proposed is somewhat less than the remuneration of a butler, but, of course, the care of other people's children is a less onerous and responsible office than the care of another person's plate and wine. The population of Halifax is in round numbers 90,000, so we suppose there are about some 9000 children in its Board schools, judging from the case of London, which has 500,000 children out of a population of 5,000,000. Besides looking after the children the medical officer will also have to inspect sundry pupil teachers. If the Halifax board is going to pay at all let it give a decent salary; otherwise let it frankly ask candidates to come forward for the honour and glory of the post.

THE MEXICAN PELVIS.

IN the June number of the *Chronica Medica Mexicana* Dr. Juan Duque de Estrada describes what he believes to be a previously unrecorded variety of contracted pelvis. The patient, a Mexican girl, sixteen years old, was delivered with great difficulty by perforation of the aftercoming head, the child having presented by the breech and the head being completely arrested above the brim of the pelvis. On examination the pelvis presents two striking peculiarities—complete ankylosis of the left sacro-iliac articulation and of the symphysis pubis. The bones of the pelvis as a whole are mal-developed and all the diameters except the antero-posterior of the outlet are markedly diminished. The left iliac fossa is smaller than the right and the left ilium is completely ankylosed to the atrophied left wing of the sacrum. The left ilio-pectineal line is too curved posteriorly, while anteriorly it is too straight and with the whole of the left wall of the pelvis appears to be pushed over to the right by the pressure of the left femur. The two halves of the pubes are completely ankylosed, only a slight trace of the line of the joint being visible upon the anterior surface. The symphysis pubis is directed forward in a keel-like manner and deviates to the right of the middle line. The right sacro-iliac articulation and the right iliac fossa are normal. The right ilio-pectineal line posteriorly is less curved than normal and anteriorly resembles the left in being almost straight. The asymmetry of the sacrum is very striking, the left half, markedly atrophied, is less than half the size of the right half. The whole bone appears to be rotated about both a vertical and an antero-posterior axis, so that the anterior surface looks to the left while the upper surface of the atrophied left wing is some millimetres higher than the upper surface of the right wing. The result of the abnormal curvature of the two ilio-pectineal lines and the flattening of their anterior extremities, together with the deviation of the anterior surface of the sacrum, is to give the inlet of the pelvis an obliquely triangular form. The left pelvic wall is pushed in towards the middle line, so that the left ischial spine and the left ischial tuberosity project inward to a greater extent than normal. The same condition, though less marked, is present upon the right side, so that the transverse diameters of both the cavity and the outlet of the pelvis are diminished. The subpubic arch forms an angle of 52°. The sacrum is not only rotated upon a vertical and antero-posterior axis, but also upon a transverse axis, so that the antero-posterior diameter of the outlet is increased by the deviation backwards of the lower end of the sacrum and coccyx. The pelvis resembles a Naegelé oblique pelvis in the ankylosis of the left sacro-iliac joint, the atrophy of the left wing of the sacrum, the deviation of the sacrum to the affected side and of the symphysis pubis to the sound side, the flattening of the left pelvic wall and the inward projection of the left ischial spine and the left ischial tuberosity. The same conditions, however, though to a less extent, exist upon the opposite side: thus there are some want of development in the sacrum, some flattening of the pelvic wall and some undue prominence of the ischial spine and ischial tuberosity, and these facts show that the diminution in the diameters is not due to a change affecting one side of the pelvis alone but to changes affecting both sides. While in many of its characters the pelvis undoubtedly resembles that of Naegelé it differs from it in the projecting keel-like form of the symphysis pubis, in the slight separation of the two ischial tuberosities and the consequent shortening of the transverse diameters, and in the smallness of the subpubic angle. In these it approaches the type of the transversely contracted pelvis of Robert. Dr. Juan Duque de Estrada thinks that the latter characters are sufficiently marked to show that it is not merely a Naegelé oblique pelvis modified by the ankylosis of the symphysis pubis, but that it represents a type of pelvis midway between that of Naegelé and that of Robert, for which he proposes the name of the "Mexican pelvis." The occurrence of bony ankylosis between the two halves of the pubes is an exceedingly rare event, and even in those cases where from the difficulty experienced in dividing the joint in the operation of symphysiotomy it has been diagnosed as present it is a little doubtful whether the difficulty was not due rather to deviation of the line of the joint than to bony ankylosis.

LUMINOUS SUGAR.

THERE are phenomena attending the formation of crystals which are apparently quite distinct from chemical action. When, for example, a hot saturated solution of arsenious acid is allowed to cool the act of crystallisation is accompanied by a flash of light. As each crystal forms there is a short sharp glow indicating the release of a certain amount of latent energy in the form of light radiation. A related phenomenon would seem to be the case when two pieces of cane sugar are quickly rubbed together. The flash is perfectly distinct and bluish-white in colour, the light extending into the substance itself far below the surface. Some interesting experiments on this manifestation have recently been made by Mr. John Burke, M.A., the results of which were communicated to the recent meeting of the British Association

of Science at Bristol. By mounting discs of loaf sugar on a lathe and projecting a hammer on the rotating surface an almost continuous luminosity was obtained. The wearing away of the sugar is compensated for by arranging a gradual approach of the piece to the hammer in exact accordance with the amount of sugar scraped away. In this way the spectrum has been observed and photographed. From these observations it would appear that the luminosity cannot be due to the particles of sugar becoming red hot or white hot by the impacts, the indication being that the light produced is due either to some change in the configuration of the crystals of sugar or to some sort of chemical action set up between the sugar and the surrounding air at the freshly formed surface. The fact, however, that the surrounding medium does not seem to affect either the colour or intensity of the luminosity suggests that the effect is not due to any influence of a chemical nature of the surrounding medium on the sugar, but favours the former hypothesis that the luminosity is due to some structural disturbance in the sugar itself. This ingenious and pretty study is being pursued further and the results should lead to some interesting observations. Light is so often a manifestation of physical change that it is probable some day we shall derive it for illuminating purposes in a totally different, much simpler, and less clumsy way than obtains at present.

EGYPTIAN VITAL STATISTICS.

DR. ENGEL BEY, the head of the statistical branch of the Egyptian Sanitary Department, has published the second part of a *résumé* of his weekly bulletins for the quinquennial period 1886–90. The first part, which appeared in 1895, was devoted exclusively to climate, but in his present work he deals mainly with births and deaths, his purview, however, being limited to nineteen of the principal towns of Lower Egypt. Vital statistics in Egypt may be said to be still in their infancy, having been born, so to speak, in 1886, when Dr. Engel first undertook the onerous task which he has so strenuously endeavoured to carry on in the face of countless more or less unavoidable difficulties. It is true that in the time of Clot Bey a system of registration was introduced which in theory was admirably comprehensive, but practically the results could never be depended on owing to the ignorance and corruption of the native officials and also to the absence of a trustworthy census. The latter defect was remedied last year, and now that the Soudan question has been so triumphantly resolved it is to be hoped that funds may be forthcoming to establish the vital statistics of the entire country on an assured basis.

A NOTIFICATION ANOMALY.

FEW provisions of the Public Health Acts afford a better illustration of the oversight of Parliamentary criticism than is presented by that portion of Section 55 (1) (*b*) of the Public Health (London) Act, 1891, which enacts that "when the certificate refers to the inmate of a hospital it shall specify the place from which and the date at which the inmate was brought to the hospital, and shall be sent to the medical officer of health of the district in which the said place is situate." Now, the effect of this provision as to the destination of the certificate is that, although the patient may have been in the hospital in question for even six months or more, when the notifiable condition develops, the medical officer of health of the district in which the hospital is situated must remain in ignorance of the case while the medical officer of health of the place from which the subject was brought, perhaps a year previously, receives the certificate. In other words, if an outbreak of typhus fever occurred in a London hospital amongst patients brought from a distance, the medical officer of health of the district containing the hospital might, in so far as legal obligations go, be unaware of the occurrence. The remedy for this state of affairs is obviously simple, and consists in having a certificate forwarded to each of the medical officers of health who might be concerned, or by leaving it open to the notifying medical man to send the certificate to whichever source he regards the evidence as indicating. Or, again, a certain limit of time might be fixed—say a month—during which a certificate should be dispatched to each district concerned, whereas after the lapse of that interval all certificates should go to the medical officer of health of the district in which the hospital is situated.

THE WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

THIS society has secured considerably extended accommodation for its members in the new wing of the West London Hospital through the kindness of the authorities. Its membership of over 500 produced such a large attendance during the last year that the board-room of the hospital was wholly inadequate. The first meeting of the winter session 1898–99 will be held on Friday, Oct. 7th, at 8.30 P.M., when the President, Dr. S. D. Clippingdale, will deliver his opening address on "Some Considerations of the Life and Work of a General Practitioner."

THE PLAGUE IN INDIA.

THE plague seems to be widely spread in India, and the latest accounts from Bombay show an increase in the total mortality in that city for the week ending Sept. 10th, as well as a slightly increased death-rate from plague over that of the previous week. It has been felt that no system of quarantine and severely restrictive measures for the repression of plague could be carried on for years without inflicting grave hardship on the population and bringing about disastrous commercial consequences. The Government have therefore decided to make certain changes in the regulations with reference to railway travelling. Detention camps and passes will be discontinued, and a strict medical examination accompanied by disinfection of clothing will be instituted at convenient centres and at places of arrival. Persons coming from infected localities will be subject to surveillance for ten days after arrival. Further details from our Special Correspondent will be found in another column

THE USE OF TOXINS IN INOPERABLE SARCOMA.

DR. WILLIAM B. COLEY, of New York, has lately read a paper before the American Medical Association in Denver on the Treatment of Inoperable Sarcoma with the mixed toxins of Erysipelas and Bacillus Prodigiosus, with the immediate and final results in 140 cases. An abstract of the paper is given in the *Medical Record* of New York of August 27th and is worthy the attention of surgeons. He says: "No one could possibly witness a number of hopelessly far advanced inoperable sarcomata, the diagnosis of which had been confirmed by the most skilled pathologists, entirely disappear under injection of these toxins without being convinced that there is something of value in them. The successful cases which have now remained well beyond three years more than offset the many failures." He does not recommend the treatment in cases amenable to operation "unless it be in a few cases in which a brief period of treatment was advised with the idea of avoiding amputation of a limb." He thinks it advisable to try to save a limb if the tumour be in the soft parts and especially if spindle-celled. He gives a case which excites hope and justifies the treatment—that of a patient, now well for nearly two and a

half years, with rapidly recurrent spindle-celled sarcoma of the right hand in which amputation would have been performed had not the growth disappeared under the injections. He gives the following summary of results: "Well over three years, 8 cases; well from one to three years, 9 cases; well from six months to one year, 4 cases; recovered after having once disappeared, 4 cases; 2 of these patients died, 2 are still living in good health after further treatment." He has collected from published reports and personal communications from other surgeons 35 cases of inoperable sarcoma in which the tumour completely or very nearly disappeared as a result of this treatment. The chief dangers of it are too large a dose of the toxins and pyæmia from insufficient precautions as regards asepsis.

THE GUILD OF ST. BARNABAS.

THE objects of the above guild are the encouragement of a high ideal of faith and practice amongst students of medicine who are members of the Church of England. The guild services are open to all medical students. Further information may be had on application to the honorary secretary, Mr. B. E. G. Bailey, 14, Woburn-square, W.C. We are asked to give publicity to the following. There are monthly guild services in the North-West Chapel, St. Paul's Cathedral (entrance by west door), at 6.15 P.M. on the first Wednesday of every month—namely, on Oct. 5th, Nov. 2nd, and Dec. 7th. Tea in the Chapter House (north side of Cathedral) at 5.45 P.M. Sessional Corporate Communion in the Jesus Chapel, St. Paul's Cathedral (entrance by small south-east door), at 7.30 A.M. on Thursday, Oct. 6th. The chaplain of the guild is the Rev. Canon Newbolt.

COMBINATION HOSPITALS FOR INFECTIOUS DISEASES.

ALTHOUGH sanitary authorities, such as urban and rural district councils, may combine together under the Isolation Hospitals Act of 1893 very few authorities have availed themselves of the opportunity. When a number of authorities do so it is gratifying to record such a step which is in the direction of progress in the prevention of infectious disease. Chorley Corporation and Chorley Rural District Council, at the suggestion of Dr. Harris, medical officer of health of both bodies, have combined with Adlington and Leyland District Councils to build a joint hospital for infectious diseases, and the foundation-stone was laid recently at Heath Charnock, Lancashire. The hospital will be under the control of the Chorley Joint Hospital Board which will consist of representatives of the four authorities mentioned. The plan of the hospital is on the pavilion system, three of the pavilions being for the accommodation of patients; besides these there will be one block for administrative purposes and another for laundry, electric lighting supply, disinfecting rooms, harness and van rooms, &c. The blocks will be 50 ft. apart. The infectious diseases provided for are diphtheria, scarlet fever, and enteric fever. The diphtheria block will contain 4 wards, 8 beds, and 2 nurses' rooms; the scarlet fever pavilion will have 2 wards, 16 beds, and a nurse's room; and the enteric fever block will comprise 2 wards, 12 beds, and a nurse's room—a total of 36 beds and 4 nurses' rooms. The contract for the building is £10,000, the total cost of the whole buildings to be erected being £17,000. This joint hospital is to make provision for a population of 50,240, according to the last census in 1891, a total acreage of 48,445 acres and a rateable value of £272,559. 24 townships are to participate in the benefits of this hospital. We congratulate Dr. Harris, the medical officer of health of Chorley and Chorley Rural District Council, upon his perseverance in recommending the authorities to combine and provide a suitable hospital for infectious cases. His recommendations were first made in 1892, and now, six years after, he has the pleasure of seeing a commencement of the necessary work. We regret, however, that the accommodation is not greater, but probably this can be easily remedied afterwards. 16 beds for scarlet fever and 12 for enteric fever in a population of over 50,000 is not sufficient; 1 bed per 1000 has been found to be quite little enough for isolation purposes, but no doubt these pavilions will be built so as to admit of their enlargement in the future. We trust that other district councils will follow this example.

THE HEALTH OF THE PRINCE OF WALES.

IN the letter from our Paris correspondent which we publish this week will be found some criticism from the pen of Dr. Lucas Championnière with regard to the treatment of the Prince of Wales's fractured patella. We need not comment on this criticism, but are glad to be able to say, on the authority of Sir William MacCormac, who has just returned from visiting His Royal Highness at Mar Lodge, Braemar, that His Royal Highness is progressing most favourably both as regards his general health and the local injury.

LONDON POST-GRADUATE COURSE.

THE winter term of the above course will commence on Monday, Oct. 10th. Courses of lectures and demonstrations will be given on Skin Diseases (Hospital for Diseases of the Skin, Stamford-street, Blackfriars), on Mental Diseases (Bethlem), on Diseases of the Throat, Nose, and Ear (London Throat Hospital), on Bacteriology (King's College), on Public Health (Parkes Museum), and on General Medicine and Surgery (Cleveland-street). All the classes can be taken out or a portion of them. The fees are from £1 1*s.* to £3 3*s.* It is hoped that the work of the course will be merged in that of the Medical Graduates' College, which it is expected will be opened early in the new year. Particulars can be obtained from, and fees paid to, the secretary, Dr. Fletcher Little, 32, Harley-street, W.

PTOMAINE POISONING.

AT this period of the year symptoms of ptomaine poisoning after the consumption of decomposing meat are by no means infrequent and we have more than once drawn attention to the uncertainty with which meat containing these poisons can be detected, and also to the fact that if several people eat portions of the same joint some may be seriously affected while others escape completely. On Sept. 16th Mr. Walter Schröder, the deputy coroner for Mid-Surrey, concluded an inquiry concerning the deaths of two people, a cook and a nurse employed in the same household. The women died on August 23rd and 27th respectively from the effects of ptomaine poisoning. A local butcher had supplied to the family a tongue and some lamb. All the members of the household, including a visitor, were in good health until August 19th. On the morning of that day the lamb was cooked for lunch and partaken of by eight people. Later in the day all were taken ill and two of the cases proved fatal. After the sickness had occurred the tongue, which had been purchased on the 10th, was found to be "putrid and maggoty." The lamb, before being cooked, had been put in the same larder but not in close proximity to the tongue. After hearing evidence the jury found "that the deceased died from exhaustion and gastro-enteritis consequent upon ptomaine poisoning due to a joint of lamb eaten by them on August 19th, that the contagion was due to the presence of a portion of an ox-tongue in the larder in a putrid state, and that the said deaths were the result of misadventure, nobody being to blame." 4 gr. to 5 gr. of a ptomaine were

found in the viscera of the deceased and the analyst expressed the opinion that the lamb had become contaminated through being put in the larder with the tongue and it was highly probable that the contagion was conveyed from one to the other by flies. This suggests a startling possibility and may throw considerable light on the exceedingly toxic character of meat which otherwise to taste and smell and by other evidence appears perfectly wholesome. Flies should always be rigorously kept out of the larder and meat stores because there is never any certainty as to the character of the last place of their alightment. The adoption of gauze safes and covers is therefore a wise precaution.

ANNUAL DINNERS OF THE MEDICAL SCHOOLS.

IN addition to the list we have already published—see THE LANCET of Sept. 10th, p. 706—we wish to announce that the annual dinner of the St. George's Hospital Medical School will be held to-day (Saturday, Oct. 1st) at the Whitehall Rooms of the Hôtel Métropole at 7 30 P.M., under the chairmanship of Mr. Timothy Holmes, Treasurer of, and Consulting Surgeon to, the Hospital; that of King's College Hospital Medical School at Limmer's Hotel on Monday, Oct. 3rd, at 6.30 for 7 P.M., Mr. Boyce Barrow in the chair; and that of Westminster Hospital Medical School also on Oct. 3rd, at the Holborn Restaurant, at 7.30 P.M., Sir G. S. Robertson, K.C.S.I., in the chair.

THE SIXTH INTERNATIONAL OTOLOGICAL CONGRESS.

THE Sixth International Otological Congress will be held in London on August 8th, 9th, 10th, 11th, and 12th, 1899. President, Dr. Urban Pritchard, Professor of Otology at King's College, London. The meetings will, by permission, be held at the Examination Hall of the Royal Colleges of Physicians and Surgeons, Victoria Embankment. The subject chosen for special discussion is "Indications for Opening the Mastoid in Chronic Suppurative Otitis Media." A large and influential British organisation committee has been formed, the treasurer being Mr. A. E. Cumberbatch, 80, Portland-place, London, W., and the honorary secretary, Mr. Cresswell Baber, 46, Brunswick-square, Brighton. The International Otological Congress, which assembles every four years, met last in Florence, where a very successful gathering was held under the Presidency of Professor Grazzi.

A NEW SYSTEM OF NOTIFICATION OF MEASLES.

WHAT may be called the orthodox notification of measles is being pursued in sundry sanitary districts with varying degrees of perseverance and with varying results. Those who do nothing but sit still and gaze at the certificates as they arrive, and who grumble periodically as often as the notification bill becomes due are naturally somewhat uncertain as to the value of notification. So, too, are those who adopt the notification of measles but who at the appearance of the first account strike off the disease from the list. Again, those who are endeavouring to deal in some degree with the notified cases are somewhat divided in their opinions. Here they are satisfied as to the value of the proceedings; there they are hesitating. In the borough of St. Helens the notification of measles is partial and what must be termed unorthodox. But in spite of both these facts we shall watch the system with interest. The head teachers of the several schools in the borough are supplied with properly prepared postcards addressed to the medical officer of health, Dr. Drew Harris. On these cards the teachers are requested to notify any suspected cases of measles which may come to their notice. If the suspected case turns out to be measles the teacher receives the sum of 3*d*. for his or her trouble, and as an illustration of the hopeful character of this new system it may be related that out of 988 suspicious cases which were recently reported 582 proved to be cases of measles. Each case was visited by the female sanitary inspector, the necessary particulars were procured, and advice was given; all children from infected houses were excluded from school attendance. There can be no doubt, Dr. Harris reports, that by this means many lives were saved and that the epidemic which prevailed was materially curtailed. The cost of the system was not great.

PAPILLOMATA OF THE URETHRA.

IN the *Boston Medical and Surgical Journal* of July 7th Dr. F. G. Balch has published a case of this rare form of urethral disease. Tumours of the urethra are comparatively infrequent. Papillomata, polypi, and carcinomata occur. Of these papillomata are the most common. According to Klotz they occur frequently in or near the meatus, but are much less common farther down. Papillomata are usually multiple, bleed easily, and are sometimes tender. A young man, aged twenty years, had a mild gonorrhœa, and four years afterwards had sounds passed for seminal emissions. He noticed a wart growing from the edge of the meatus and a slight purulent discharge from the urethra. He had not been exposed to venereal infection. The wart was cauterised with chromic acid but returned. There was considerable obstruction to the flow of urine, which came in a small scattered stream. The meatus was divided, and by means of the endoscope the anterior urethra was found to be thickly studded with papillary growths, the deepest being 2 in. from the meatus. They varied in size from that of a pin's head to that of a cherry-stone. Under cocaine they were removed with a curette. There was some trouble in scraping away the bases which were very firm. The raw surface was touched with glacial acetic acid. A week later the anterior urethra was painted with a solution of nitrate of silver (10 grains to the ounce). After two weeks two or three minute growths appeared near the meatus and were touched with glacial acetic acid. The result was completely successful.

AN AMERICAN VIEW OF THE VACCINATION ACT, 1898.

OUR contemporary the *New York Medical Record* is evidently much shocked with the new principle introduced into our vaccination laws by Section II. of the Vaccination Act, 1898, as gradually abolishing the compulsory principle. The editor says: "If false beliefs conscientiously held are to be allowed to stand in the way of the safety of the community there is an end of all sanitary legislation. A person who is allowed to refuse vaccination on conscientious grounds may refuse to isolate a patient with small-pox and the State cannot consistently force him to do so. And this in the country of Jenner!" In a later number (Sept. 10th) the editor returns to this subject and says that "by far the most important event which has occurred in the English medical world within the memory of the present generation has recently been consummated. The Compulsory Vaccination Bill has been practically rendered of no effect in England." The writer contrasts this action with the sentiment of the United States and with the universal faith in vaccination in the leading countries of Europe. "All countries of the civilised world," our contemporary says, "will watch with interest the tremendous experiment." In spite of the law, however, the "tremendous experiment" will have its limitation, for it is found that the medical officers of health of the most rabidly anti-vaccinationist communities are quite sound on the vaccination question.

They have extra early intimations of actual cases and vaccination and revaccination and severe isolation are immediately set in motion. The most conscientious objector revises his faith and takes the benefit of the doubt, and only hundreds die where, if he had his way and retained his faith, thousands would succumb. Thus the most guilty communities are saved by medical men and the laws which they have promoted, including that of vaccination.

UMBILICAL ERYTHEMA.

A SHORT paper by Dr. P. Bar is quoted in the *Journal de Clinique et de Thérapeutique Infantiles* of Sept. 15th 1898, in which the writer directs attention to the not infrequent occurrence of umbilical erythema, sometimes attended by septic absorption, in newly-born children. He believes that this condition is due in many cases to septic infection induced or encouraged by the practice of bathing infants during the first days of life. More especially is this cause accountable in some maternity hospitals where one bath is used for a succession of children and is not always properly cleansed. Such at least is his experience. On the other hand, he has had highly satisfactory results by adopting the following method. The segment of umbilical cord left attached to the child after ligature is at once wrapped in cotton-wool and bound in the usual way. No water is used. The skin is cleaned of its caseous coating by means of a cotton-wool swab soaked in an alcoholic solution—eau de cologne, for example. After two days the segment of the cord has practically withered and, with the exception of a small portion next the umbilicus, is cut away, the stump being dressed with iodoform gauze and absorbent wool. No bathing is done till after the cicatrisation of the umbilicus on or about the fifth day, save that the hips and groins are cleansed with boiled water when needful. After this date the child is bathed as usual. This method is avowedly intended more for hospital than for private practice for the reason stated above. Practitioners in this country may, perhaps, consider that Dr. Bar's abhorrence of the bath is excessive, and they will probably prefer to entrust even the dried umbilical segment to the natural efforts for separation. They are certain also, however, to appreciate the principle of a dry and aseptic umbilicus which underlies his observations, a principle which is still apt to be forgotten in the practice of midwifery nurses.

THE annual medical service of the Guild of St. Luke will be held in St. Paul's Cathedral on Wednesday, Oct. 19th, at 7.30 P.M., when the Bishop of London will preach the sermon. All practitioners who are graduates are requested to wear hood and gown whether they have a medical degree or otherwise, and Fellows of the Royal College of Surgeons of England are requested to wear their Fellows gowns.

ACCIDENTS TO MEDICAL MEN.—On Sept. 23rd, at the South-Western Railway Station at Salisbury, an engine dashed into a carriage in which were members of the Teign Naturalists' Field Club who had been on a visit to Salisbury, conducted by Mr. C. H. Wade, L.R.C.P. Lond., M.R.C.S. Eng., vice-president of the association. The party included five medical men, Dr. F. C. H. Piggott (of Teignmouth), Mr. C. H. Wade (Torquay), Dr. Brushfield (Budleigh-Salterton), Mr. Skardon (Paignton), and Mr. P. Q. Karkeek, the medical officer of health of Torquay. Mr. Skardon received injuries to his head and Mr. Karkeek suffered from shock and contusion of the neck and shoulders.—On Sept. 20th Mr. Joseph Harper, L.R.C.P. Lond., M.R.C.S. Eng., J.P., of Barnstaple, was badly bruised in a carriage accident. Mrs. Harper, who accompanied him, was severely injured and is suffering from cerebral concussion.

PROFESSOR KOCH ON TROPICAL MALARIA.

ONE of the most interesting of his "Reise-Berichte," noticed in THE LANCET of Sept. 24th, p. 825, is the report sent by Professor Koch from Daressalam, German East Africa, on Feb. 25th of the present year. It is devoted to the subject of malaria, which he points out is the common endemic of the country, where typhoid fever and diphtheria are almost unknown and even dysentery occurs but rarely, at least on the coast. But from 1891 to 1896, in the Daressalam Hospital of 899 patients, 485, or 54 per cent., were cases of malaria. The variety is that known as tropical malaria, causing anæmia and weakness with great tendency to recurrence, not seldom appearing in a fatal pernicious form, as the so-called "blackwater fever." Professor Koch, in investigating the affection, selected only those cases which clinically ran the characteristic course and were influenced by quinine. In all such he found the malaria parasite in the blood, whilst he never succeeded in detecting this in other cases regarded as malarious but not possessing the characteristic clinical features. Thus of 154 cases examined 72 were true malaria and exhibited the parasite, 63 of them being tropical malaria, 7 were tertian, 1 quartan, and 1 "irregular" malaria. He came to the conclusion that blackwater fever could not be regarded as truly malarious and proposed to make a special report on that affection. The solitary examples of quartan and irregular fever were, he thought, imported cases, whilst the proportion of tertian to tropical forms—7 to 63—showed that the type which is most common in Europe is least so in East Africa. Tropical malaria is, he says, distinguished from other forms by its peculiar course and the particular kinds of blood-parasites which are regularly found in it. As most of the cases in hospital were already under treatment by quinine when he examined them it was not easy to obtain a correct notion of the natural course of the disease, and it was not until he had the opportunity of seeing cases at a sufficiently long interval after quinine had been suspended that such a view of the characteristic type of tropical malaria could be gained. He was then surprised to find the paroxysms approximating to the tertian type, but differing from European malaria in the long duration of each individual attack, the fever lasting over two days and remitting more or less markedly on the morning of the second day. The temperature curve thus comes to have a superficial resemblance to quotidian, especially when the remission on the second day is strongly marked, but a true quotidian was not observed, and he thinks it likely that such rarely, if ever, occurs in East Africa. It is singular that the onset of the fever is almost invariably at midday or in the evening, whilst the apyrexial period regularly commences in the forenoon. The course of development of the parasite accords with the type of the temperature curve. It has the characters described by other observers in the quotidian malaria of other tropical countries, assuming the signet ring form, and it increases in size, a point not hitherto noticed but of importance in determining the nature of the attack. The smallest size of the ring-shaped parasite is from one-eighth to one-sixth the diameter of a red blood corpuscle, and when it attains its largest size its diameter is about one-half that of the corpuscle it inhabits. The smallest (and youngest forms) present only a single nodular thickening at one part of the delicate ring, which stains deeply and appears as a dark spot on the circumference of the circle. As the sphere enlarges its border becomes thickened along a certain distance, and always at the opposite pole to the site of the nodule or nodules. This thickening increases until a portion of the sphere has the shape of a sickle and vacuoles appear in the thickened part. The parasites of tertian and quartan fever contain pigment in amount corresponding to the size and age of the parasite, but in tropical malaria the parasite is colourless, or rather its pigment is concealed, occurring in such fine granules that it is only in the most advanced stages and by most careful inspection that it can be detected as a brownish tint in the thickened area. That they do contain pigment is further evident from the examination of the spleen in fatal cases; here the organisms were seen to contain abundant pigment, whereas during life this was scarcely visible. Professor

Koch explains this by the suggestion that the parasites being deprived of oxygen either die or pass into a resting state in which they contract and their pigment accumulates in masses. The parasite of tropical malaria resembles those of tertian and quartan in forming spores when it ceases to grow. He has never observed this spore formation in the living blood, but in the spleen of subjects who have died from tropical malaria it can be observed. The spore-containing parasites are about half as large as those of tertian fever. Thus there were circular organisms with a central mass of pigment, others with a crenate or lobulated outline, others in which a small sphere of pigment was surrounded by a rosette of spores, and finally numerous free spores scattered amongst pigment residues.

The relation of these forms to the stages of the fever is as follows. During the febrile stage the blood only contains the young simple ring-shaped parasites. Their number is small, requiring careful search to detect them, and that may be fruitless. This paucity may explain the failure of many observers to detect parasites in tropical malaria. Towards the end of the paroxysm the parasites begin to grow but are still few in number, but when the attack is subsiding they assume the aspect of large rings. Their number corresponds with the severity of the attack, prolonged research being requisite to discover them in milder cases. As a rule, one parasite can be found in several microscopical fields, and sometimes every field contains from five to ten. In the two fatal cases which were examined there were about 10 per cent. in the one and 50 per cent. in the other of the red corpuscles in which parasites were seen. Where they are numerous one corpuscle may contain two or more parasites. The further stages of development cannot be observed in the blood drawn from the finger, but in the spleen and other organs, where the spore stage can be traced, the dissemination of spores and their attaching themselves to the blood corpuscles marks the onset of a fresh febrile paroxysm, the large forms having all disappeared. Professor Koch thus sums up these facts:—

1. Since the developmental process of the parasite lasts two days and the temperature curve is concomitantly repeated regularly every two days tropical malaria is a true tertian, which is distinguished from the tertian of Europe by the kind of parasite and the longer duration of the paroxysm.

2. If it be desired to determine the presence of parasites of tropical malaria the examination must be made as early as possible in the apyrexial period, because there is more certainty then to find the largest and most numerous parasites.

3. Since experience teaches that quinine acts best against malaria when it is given a few hours before the commencement of the attack, it should be employed in tropical malaria just when the large ring-shaped parasites appear in the blood.

In respect to the semilunar forms of parasites described by Laveran Professor Koch cannot agree in the idea that they have anything to do with a new generation of the parasites and a return of fever. He describes one case in which the fever spontaneously subsided, no quinine being given, and where the temperature remained low. Here, as in other cases, the early small rings were succeeded by larger ones as the paroxysm terminated, and then with the continuance of a lower temperature the ring-shaped organisms were entirely replaced by crescents which persisted for days without any fresh access of fever. And as this patient did not have any recurrence, but long remained perfectly well, Professor Koch thinks that in his case the crescents pointed to a condition of immunity having been established. So, again, in another case the presence of crescents corresponded with freedom from fever, the re-appearance of "rings," with a recurrence of the paroxysm. Moreover, cases of ring-shaped parasites were just those where the fever returned and where repeated doses of quinine were needed to prevent such recurrence. Relapses generally took place after from ten to twelve days, but they might be postponed by quinine short of actual arrest of the disease; but relapse was never seen later than a month. A recurrence of fever at a longer interval could not be with certainty considered a relapse; it might be a fresh infection. The shortest interval before a relapse may be taken as identical with the incubation period of tropical malaria on the hypothesis that the relapse is caused by a few germs left behind from the former attack. Erroneous views prevail as to the incubation of tropical malaria; thus it is often thought that exposure at a day's hunting or a wetting can be followed next day by a malarial attack, but this is hardly conceivable having regard to the fact that infection takes places through a few germs, which do not multiply like bacteria, but after two days' development increase only about tenfold. The tiem required for them to produce sufficient metabolic products to give rise to the characteristic febrile attack is therefore relatively long; in certain cases, such as the appearance of malaria on board ships which have been only a short time in contact with the land, there has been an incubation period of at least from ten to twelve days. This is borne out by an instance for which he was indebted to Dr. Spilker of H.M.S. *Condor*. On March 10th, 1897, the *Condor* anchored in the Moa Bay on the boundary of German and British East Africa, and in the evening of the 11th two boats with an officer and ten men were sent to shore. The boats went up a river surrounded by mangrove swamp and the crews had to pass the night in its vicinity. On March 23rd, or eleven days after this expedition, almost simultaneously in the afternoon, four men, and two days later two other men, from these boats' crews were attacked with typical tropical malaria. It is instructive that on the evening of the expedition the men had each taken 1 grm. of quinine and next morning 0·5 grm. as a prophylactic and yet some of them were attacked by malaria.

Professor Koch says that he has no positive proofs of the mode of infection, although he remarks that many surmises have been made. These various possibilities tend to become more and more restricted as knowledge of the nature of malaria increases, and as regards tropical malaria there may be said to be only two factors which can seriously be considered as media of infection. These are conveyance of the germs through drinking water and by mosquitos. The more he has studied the disease the more has he come to the opinion that the latter is probably the sole cause. It will be found that there is invariably a local and seasonal association between tropical malaria and mosquitos. There are places on the coast which are free from malaria, such as the island of Chole, to the south of the large island of Mafia. He visited this island, formerly used by the Zanzibar Arabs as a health resort, and found it to be the only place where he could sleep without a mosquito net. There is no malaria on the hills, where mosquitos, too, are absent. In the interior malaria diminishes together with mosquitos. At the seasons of the year when there are most mosquitos malaria is the most severe. His opinion is strengthened by the analogies between malaria and Texas fever and other tropical diseases of man and beast in which the parasites exclusively inhabit the blood. In all these diseases the infection is conveyed by blood-sucking insects and not by the direct transference by the insect from the blood of an infected animal to the other, but by the parasite developing in the insect's body and being thence transferred to the special host. Thus or similarly do mosquitos act in malaria, not that the mosquito immediately transfers the blood of one person to another, but that it first infects its own species. From numerous observations on hæmatozoal diseases in the lower animals and on attempts to infect animals with the malarial parasite Professor Koch came to the conclusion that for each parasite there is a special host and that man is the sole host of the malarial organism. Not that every man is equally susceptible to malaria. There occur in the tropics persons who have lived there many years without ever contracting malaria and it would seem as if there are whole races thus immune—for instance, the negro population of the East African coasts. The only case he met with in a coast negro was that of a boatman of the Customs at Rufidjimundung, who had a mild attack, rapidly cured by a single dose of quinine. In this patient the ring-shaped parasites were in small number. On the other hand, the negroes of the Usambara region have no such immunity, although they in great part come from the same stock as the coast negroes. The other coloured folk, such as Indians and Chinese, who inhabit the region are not so immune, although he knew of some Indians who had been at Daressalam for years and were quite healthy. Bearing these facts in mind and also what has been said about the crescent-shaped bodies it seems clear that there is an actual immunity against malaria, which among the coast negroes may be partly congenital, but with those who come from malaria-free countries must be acquired. Here, again, there is a remarkable analogy with Texas fever and Professor Koch ventures to express the hope that as in that disease so in tropical malaria an artificial immunity will one day be attained.

Tropical malaria is not so dangerous a disease as is

generally thought. There were but 2 deaths out of the 63 cases observed by Professor Koch, and he does not doubt that had these cases been recognised earlier and appropriately treated by quinine that they would have recovered. In all the other cases the effect of quinine was rapid and striking. As a rule 1 grm. sufficed to cause the disappearance of the parasites from the blood. It may be followed by another rise in temperature, but this rapidly subsides and during this final access he never found any parasites in the blood. This "after-fever" is probably due to the presence of the residues of the parasites and not to their vital activities. And it may be that the febrile paroxysms generally are due, not to the young parasites, but to the products set free by the death of the older generation. To ensure no recurrence of fever it is necessary to give another dose of quinine at the close of the "after fever." However, in order to exert its full action the drug should be given when the blood contains the ring-shaped organisms, and although the temperature serves as a guide the most certain test is that derived from microscopic examination. Hence the microscope is essential to the physician in the tropics both for early diagnosis and for treatment. For the earlier the quinine is given the better, the constitutional effects being in proportion to the number of attacks of fever which the patient has experienced. As the digestive organs are directly affected there is less chance of rapid absorption of quinine in cases where it is given after several attacks than when it is given quite early. It is important that the quinine should be of good quality and in a form for ready absorption. There is great tendency to relapse in tropical malaria, for even after quinine some germs may remain behind which serve to revive the infective process. These relapses weaken the power of the patient. The measures directed against such relapse serve also as prophylaxis and Professor Koch regrets that he has not been able to advance far in his researches in this important direction. He found that a dose of 0·5 grm. of quinine daily did not prevent relapse, but that 1 grm. given every fifth day in one case ensured freedom from relapse; in another there were slight and brief recurrences. Although he usually considers a dose of 0·5 grm. every third day sufficient for prophylaxis he cannot say that this is always sufficient, and that a single large dose does not ensure freedom from attack is evident from the cases which occurred amongst the crew of the *Condor*. If it should be finally found that a dose of 0·5 grm. is insufficient it might be preferable to give other drugs, as arsenic, since most patients do not bear well the long-continued dosage with quinine. In any case a prophylaxis so obtained can only be temporary, sufficing for the traveller or those who are only passing through the malarious districts. In the case of others exposed to infection so long as prophylaxis by drugs is not quite proved there are two other measures to be enforced. Firstly, all water used for drinking should be boiled, a fundamental thing essential in the prophylaxis of dysentery and other tropical diseases. Secondly, people must be protected during sleep by good mosquito nets. By "good" Professor Koch means one with sufficiently close meshes, which are often not used. Besides these personal measures the dangers of malaria may be mitigated by drainage, the cultivation of swamps, the proper disposal of fluid waste, and, above all, the fit construction of dwellings. In closing his report Professor Koch remarks that he has not seen in the subjects of tropical malaria any case of so-called malarial dyscrasia such as commonly occurs in other malarial districts. The attack itself is more severe, but the patient suffers less from after-effects than in tertian fever. Even children who have passed through the disease remain in good health. He also makes a few remarks on the cases of tertian which he had occasion to observe.

THE SANITARY PROGRESS AND INSTITUTIONS OF JAPAN.

THE Central Sanitary Bureau of the Japanese Ministry of the Interior has issued a report on the sanitary institutions of the Imperial Government of Japan. From this document it would appear that the unparalleled progress accomplished by Japan in the adoption of western civilisation includes all the leading phases of sanitary reform. It was in 1868 that the great Japanese revolution took place by which the feudal system was abolished. Government was then centralised in the hands of the Mikado. The Constitution was granted in February, 1889, and the first National Parliament met that year. The earliest attempt to establish a central authority to deal with sanitary matters was made in 1873, when a medical bureau was attached to the Education Department. Two years later this was transferred to the Home Office and was named the "Sanitary Bureau." Since 1875 all matters dealing with public health have been relegated to the Ministry of the Interior. Then also chemical laboratories were opened for the analysis of foods, drugs, &c. Japan is divided into forty-five prefectures or provinces, each having a governor depending on the Home Minister; then there are numerous subdivisions which correspond to our counties, urban and rural districts, wards, &c. The police office of these local authorities carries out sanitary measures and appoints local sanitary boards to study technical questions and advise. The Central Sanitary Bureau is divided into three sections, the health office, the epidemic prevention office, and the medical office. The first deals with drainage, water-supply, food-supply, &c.; the second with quarantines and epidemics; and the third with the control of medical education, midwives, pharmacies, &c. Previously to the organisation of this Bureau and since the revolution or commencement of the Meiji era the Government had issued many ordinances concerning the sale of opium, the vaccination of infants, &c., but there was no central control to see that these laws were uniformly applied. Also, although the Government was willing to apply the law, the nation was still ignorant and experience in England has taught us that the best of laws are of but little avail if the population are uneducated and indifferent. The Japanese Government therefore rightly concluded that education must precede legislation. Consequently the Government published the *Sanitary Bureau Magazine*, which was circulated among all officers, State functionaries, and others. Thus some knowledge as to the principles of sanitary administration was spread in the right quarters. This publication was commenced in April, 1876. In the course of time interest in public questions began to spread so rapidly that the *Magazine for the Improvement of Sanitary and Medical Knowledge* was started by private enterprise. Then many sanitary and medical societies were founded and these bodies also issued various publications and magazines. Thus by the year 1884 the Government found that it was no longer necessary to publish a magazine of its own; education on sanitary matters was now being actively spread independently of such Government intervention.

Needless to say that most of the knowledge thus acquired was imported from abroad. The European and American technical press was ransacked for data and information, and in the course of time a great number of Japanese were sent abroad to learn, observe, and report. The first investigator who received an official mission of this description was Dr. S. Nagayo, a professor at the Japanese Medical College, and he accompanied Prince Twakura, who was sent as Ambassador to Europe and the United States in 1871. Since then we have often had the opportunity of welcoming various Japanes delegates at sanitary and medical congresses and exhibitions. It may be remembered that there was a Japanese Section at the Health Exhibition held at South Kensington in 1884. Several Japanese medical men have studied at Professor Koch's laboratory in Berlin and in other European centres of scientific research. Also European men of science have been employed in Japan. For instance, Mr. Burton is Professor of Sanitary Engineering at the Japanese Imperial University and Sanitary Adviser to the Japanese Ministry of the Interior. Laboratories under the control of the Home Office have been established at Tokyo, Osaka and Yokohama, where chemical analyses are made both for the authorities and the public, and to which engineers are attached who undertake sanitary inspections. These laboratories have also their medical section, where drugs are tested and where some control is exercised over the sale of patent medicines. There is a very useful regulation to the effect that tradesmen must not quote any one sentence from the analyses made of their goods in these Government laboratories. If they wish to allude to the analyses they must quote it in its entirety, instead of only selecting a few favourable words.

The spread of Western ideas in Japan has not proved an unmixed blessing. Adulteration and fraudulent trading have followed in the wake. As the demand for European medicaments increased dishonest foreign merchants introduced a large quantity of inferior and adulterated drugs into Japan. Consequently a law had to be enacted to the effect that all

drugs landed in Japan must be taken to the State laboratories before they could be sold to the public. The first laboratory of this description was opened at Tokyo in 1874. In the following year another laboratory was established at Kyoto and a few months later a third was opened at Osaka. At first the analytical chemists were all foreigners, but in a few years the native chemists were fully qualified to take the work in their own hands and the employment of foreigners was gradually given up. The last of the foreign chemists was employed at the Yokahama Laboratory, but he died in 1884 and since that date the work of chemical analysis has been entirely in the hands of the Japanese. The most numerous analyses were of quinine and iodide of potassium, for these drugs were not only in great demand but were easily adulterated. At first a stamp was affixed to the drugs which had been examined, but in 1877 written reports were given instead mentioning the trade mark of the drug and stating whether it was suitable as a medicine. This caused the druggists to be more careful as to the quality of the chemicals, &c., which they imported into the country. Originally the examinations were gratuitous, but as the result was an increase of confidence, of sales, and of price, the Government felt justified in making the importers pay a fee for the analysis of the medicines, foods, drinks, &c., which they sold.

During the civil war and in consequence of cholera epidemics there was a greater demand for carbolic acid than could be supplied by foreign importations. The Government consequently started a factory of its own, and as Japan is rich in materials this manufacture of carbolic acid in time began to extend to other drugs and a general medicine manufacturing department was attached to the Tokyo Hygienic Laboratories. Subsequently a botanical garden for medicinal plants was established, and all these institutions were naturally also of great use to the students of medicine.

It was in 1884 that the Sanitary Museum was opened, and it contains not only a large library, but models of houses, sewers, drains, crematoria, waterworks, &c. In 1896 a Serum Institute was set up at Tokyo, under Dr. Tomaye Takagi, where the diphtheria antitoxin is produced. Two vaccine farms—one at Tokyo and one at Osaka—were likewise organised, whence vaccine lymph, taken from the calf, can be supplied throughout the country. This was commenced so far back as the year 1874, but foreign calves had to be procured, as the skin of the Japanese calves is generally too thick and too hard. The vaccine now produced in Japan in considered of such good quality that a large quantity is exported to Hong-Kong and other Chinese ports. The production of calf lymph was so great that in 1892 vaccination from the human arm was altogether abolished. But as there was money to be made many private persons began to make vaccine from calves, with the result that the quality soon became deteriorated and the Government had to interfere. The lymph is now provided by the National Vaccine Lymph Manufactory.

In dealing with epidemic diseases the Government gave a subsidy for the creation of an "Institution for the Investigation of Infectious Diseases," and in 1885 Dr. S. Kitasato was sent to Europe to study these questions. It was on his return in 1892 that this institution was opened in the park of Shiba, Tokyo. In 1877, during the civil war known as the South-West War, there was a terrible cholera epidemic and then many regulations were made to cope with the disease. Now the "Epidemic Prevention Board," which is a section of the Central Sanitary Bureau, deals with such matters and has the right to sanction the creation of any number of temporary epidemic inspection committees in all localities where their services are needed. They help to carry out the Law No. 36 of March 30th, 1897. This law applies to cholera, dysentery, typhoid fever, small-pox, typhus fever, scarlet fever, diphtheria, and plague. Other diseases may be added to this list, should occasion arise, by a special order from the Home Minister. According to this law it is the duty of all medical men to give instructions to families in which there are cases of epidemic disease as to the methods of disinfection which they must employ and also to notify the cases to the sanitary police. Whenever a case of infectious disease is believed to have occurred a physician must at once be called to examine the house and the patient. The medical man must report the results of such investigations at once to the sanitary police. The owner of the house is responsible for the carrying out of all measures of disinfection according to the directions of the medical practitioners or sanitary authorities. The same responsibility falls on the owners of neighbouring houses if the inhabitants have communicated with the infected person or house. If the measures of disinfection, &c. ordered are not carried out by the person concerned the local authority will undertake the work and recover the cost from the house-owner. The local authorities have the right to remove patients to fever hospitals and to isolate the patient's family in a house set aside for that purpose. When judged necessary a house or block of houses and all the inhabitants may be isolated from the rest of the community by a sanitary cordon for a period of five days in cases of cholera and for a period of seven days in cases of typhus fever. No clothing, &c., infected, or presumed to be infected, must be used, thrown away, given away, or be sent to be washed. Nor must the body of any person dying from infectious disease be removed in the ordinary manner. Such corpses must be cremated unless special permission has been given for their burial. Sanitary officers can obtain a written order giving them the right of entry into any private house in case of epidemic disease. The local authorities must organise staffs of disinfectors under the direction of medical men and provide isolation hospitals and isolation houses.

With regard to quarantine regulations ships arriving from ports declared to be infected by the Ministry of the Interior must proceed to one of the five ports where quarantine hospitals, &c., have been provided—namely, Nagasaki, Shimonoseki, Kōbe, Yokohama, and Hakodati. Here they must display the yellow flag and await the arrival of the port sanitary authorities. Ships which have been five days at sea and are in a satisfactory condition are not detained after inspection. If there is disease on board then the ship must be disinfected and the passengers and crew kept in quarantine for seven days in cases of plague or typhus fever and for five days in cases of cholera. Somewhat similar regulations are applied to railway trains. If a death occurs in a railway carriage the goods and passengers may be isolated and disinfected. Should this happen at a small station where no means of disinfecting exist the railway carriage must be sealed up and its passengers and contents sent on to a larger station, where all that is required will be found. Inspectors may accompany the carriage to see that these regulations are duly observed and that the passengers do not attempt to escape.

The local authorities have the right to isolate a part or the whole of a town or village. They can also forbid meetings, religious festivals, or theatrical performances when such gatherings may tend to spread an epidemic. They may stop any goods in transit which are likely to be infected, such as old rags, personal linen, &c., and these may be destroyed if necessary. In the same manner they can stop the sale or distribution of any food or drink which may be contaminated and they have the right to destroy the same. The local authority can also enforce general sanitary measures, such as the improvement of drains, the closing of wells, &c.; and to assist small local authorities the provincial authorities must bear a sixth of the expense entailed. If all such duties are not performed in the proper time the persons responsible are liable to be fined; and medical practitioners who do not notify cases of infectious disease within twelve hours are liable to a fine of from 5 to 50 yen and a yen is equal to about 3*s.* 6*d.* All householders and others who, by bribery and other means, seek to avoid disinfection, &c., are to be fined at least 2 yen. In disinfecting all drains, dust heaps, &c., must be cleaned out, the contents burnt on the spot or removed to a suitable place in closed vessels, and the walls and floors must be washed with solutions of carbolic acid or corrosive sublimate. Other objects must be disinfected by boiling, by steam, or by burning. In the isolation or fever hospitals there should be one head physician and an assistant physician for every 15 to 20 patients.

Vaccination and revaccination are rendered compulsory by the law of 1885 and the first clause is as follows: "After a child is born he or she must be vaccinated within one year, and if unsuccessful vaccination must again be performed within the next year; and even if successful revaccination must be performed every five or seven years afterwards." A fine not exceeding 50 yen is imposed on persons who do not observe this law.

With regard to syphilis, the first hospital for venereal disease was established at Yokohama in 1867 by the Feudal Government of Tokugawa and shortly afterwards similar hospitals were opened at Kōbe and Nagasaki, and here prostitutes were examined. The Home Office issued instructions in April 1876, to other local authorities besides those of the

three ports mentioned, instructing them to make arrangements for the medical examination of prostitutes. These examinations generally take place once a week and women who are found to be diseased are immediately taken to the hospital and their licences confiscated.

Such, briefly, are some of the principal regulations relating to the preservation of public health in Japan. Some of them, it will be seen, are more severe than our English sanitary laws, and there is hardly a phase of sanitary improvement attempted in Europe which has not been imitated by the Japanese. In some instances the Japanese legislature has been more bold and sweeping in the measures he has approved than the more experienced and older legislatures of Europe. Of course, it still remains to be seen how far these paper reforms have been carried out in actual practice; but it is only those who have made careful investigations on the spot who can venture to express an opinion as to the practical results. In any case, it is most satisfactory to see that the Government has taken the lead. If the people have not yet fully appreciated the advantages of the sanitary legislation offered them they have differed in this respect from the people of most other countries. In time the advantages of good laws obtain recognition and the whole community helps to carry them out. In the meanwhile their enactment serves as an object lesson in the education of the people.

THE SANITARY INSTITUTE: MEETING AT BIRMINGHAM.

THE seventeenth annual congress of the Sanitary Institute was opened in Birmingham on Tuesday, Sept. 27th, under the Presidency of Sir JOSEPH FAYRER, Bart., K.C.S.I., M.D. Edin., F.R.S. Councillor C. G. Beale, the Lord Mayor of Birmingham, received the members in the Council House, and afterwards took the chair at a public luncheon.

PRESIDENTIAL ADDRESS.

In the afternoon the general meeting of the congress took place at the Birmingham and Midland Institute, when Sir Joseph Fayrer delivered his Presidential Address on

The Progress of Preventive Medicine.

Sir JOSEPH FAYRER commenced by pointing out that in an age of progress and discovery, when intellectual activity was very great and when the practical applications of science were most remarkable, nothing in Her Majesty's glorious reign formed a fitter subject for congratulation than the improvements which had taken place in the vital statistics of our country as shown by the reduced mortality rate, the improved expectation of life, and the disappearance of potential causes of death. In bringing about these desirable results the Sanitary Institute, he claimed, had taken an important part. Public health was now cared for in a sense which was utterly unknown in the past; houses were better built; sewerage, drainage, and ventilation were provided for; the land was better cultivated, the subsoil better drained, the absolute importance of pure drinking water was recognised, food was more varied and more nutritious in its character, and clothing was better adapted to climate. Were all the existing official provisions enforced little would remain to be desired on the part of the Government, but as some of these Acts were not compulsory, and as others were neglected, much of their benefit was lost. Though education had done much, as far as the better classes were concerned, and upwards of 200 millions had been spent on sanitary work, with great benefit to the public health, popular teaching and example and the general diffusion of education were still necessary in order to convince the proletariat of what so intimately concerned their vital interests. The death-rate was susceptible of further diminution, expectancy of life might be enhanced, and the general conditions of living and exemption from certain forms of disease were by no means as perfect as they might be. Tainted water was still drunk, as was illustrated by the outbreaks of typhoid fever at Maidstone and Lynn last year, chimneys still vomited forth chemical fumes, rivers were still polluted, cesspools and imperfect drains, badly-constructed and ill-ventilated houses still defied alike sanitary law and common sense; and it would perhaps not be until the more complete organisation of the public health administration under a Minister of Public Health had been effected that the full benefits of sanitary legislation would be realised and the people attain to that standard of health and duration of life for which they had a right to hope.

Nevertheless, when we contrasted the present state of our country with its 29,000,000 of inhabitants with that of the Elizabethan era with its 4,000,000 we had ample proof of the ignorance of science in those days and of the great improvements which had taken place in these. A brief inquiry into the statistics of some well-known diseases would show that they had become less severe in their incidence, if not less frequent in their recurrence. In small-pox, for example, there had been a great reduction, more so than in any other disease. Since the passing of the first Vaccination Act in 1841 the death-rate had fallen from 576 per 1,000,000 to 20 per 1,000,000 in 1891–95. Vaccination, isolation, attention to rational treatment, whether therapeutic or hygienic, had preceded or accompanied, and, as most people believed, induced these results; and theories which ignored vaccination as a preventive must, it appeared to him, necessarily be rejected until a better explanation of the cause of the diminished incidence and mortality from the disease could be offered. As to the value of vaccination, all the evidence which was forthcoming seemed to show that there could be no doubt of it. As to the methods by which every individual was to be vaccinated or revaccinated, that was a subject for the State to determine. That the Acts in existence up to the present time were inadequate to this end was plainly shown by the fact that large and increasing numbers of the population were known to be unvaccinated despite their compulsory character. Lord Lister said in his speech in the House of Lords last August that one-third of the children born were unvaccinated and that one-fourth of the boards of guardians did not put the law in force. The most recent Vaccination Act, whatever might be its advantages, was certainly defective in this: that it made no provision for revaccination, the necessity for which was universally admitted by the medical profession, whilst it was very doubtful whether the modification of the compulsory clauses would have the effect of extending vaccination. This remained to be seen during the five years for which the new Act was to be in operation. Whatever the Government might have thought proper to enact, there seemed good reason to believe that as far as it was concerned faith in vaccination was as unshaken as it was in the minds of the Royal College of Physicians of London, who had recently expressed their unaltered conviction that vaccination "properly performed and duly repeated is the only known preventive of small-pox." Sir Joseph Fayrer then went on to consider the death-rate. In 1838, he said, the death-rate from fever at all ages was 1053 per 1,000,000, in 1891–95 it was 185 per 1,000,000. Fevers notably flourished where sanitation was defective, and as dirt, overcrowding, and destitution had been diminished so had typhus fever disappeared, whilst with improved drainage, the removal of excretal filth, and the supply of pure water enteric fever had become less. There was reason to think that cholera was similarly influenced, for though it had appeared in England several times since its first invasion in 1831, as in 1845–49, 1853–54, 1865–66, and even since at Grimsby in 1893, yet its virulence and activity had been gradually diminishing. Happily, the antiquated system of prevention by coercion had in England been replaced by that of sanitary measures and isolation and it was to the wise and judicious exercise of those by the medical authorities of the Local Government Board and of the local authorities throughout the kingdom that whilst neighbouring countries in the full practice of coercion and quarantine were decimated England had lately remained almost exempt. Since 1861 the scarlet fever death-rate had been reduced 81 per cent., but the diphtheria death-rate was now very much the same as it was over thirty years ago. In 1835–42 the death-rate from tuberculous disease was 3959 per 1,000,000; in 1891–95 it was 2124, not so remarkable a diminution as in the other diseases, but serving to show that sanitation had done good by helping to improve the ill-ventilated crowded dwellings, damp, water-logged soil, and impure water, and that protection against noxious trades had been of value. As to malarial diseases, they might include them in England among those which had become all but extinct. It was not to be supposed that zymotic disease could be altogether exterminated, but they could modify and diminish its incidence. But the scope and aim of sanitary science in its preventive

aspects should not be limited to the consideration of zymotic disease. It should extend to the results of abnormal social conditions arising out of the strain and struggle for existence, involving over competition in various occupations by which life was supported, and under the pressure of which so many lost their health or even succumbed. The over-pressure now exerted on the younger of the rising generation might not only involve the risk of miscarriage of true education, but dangers against which it was as much the duty of preventive medicine to guard young people as it was to protect them from scarlet fever, small-pox, measles, cholera, or any other disease. One indication of the effect of sanitary work was observed in the death-rate of the country. In 1841–50 it stood at 22·4 per 1000; in 1891–95 at 18·7 per 1000; though for the four years 1890–93 it had risen owing to epidemic influenza.

The condition of India, continued Sir Joseph Fayrer, speaking from great personal experience, presented an admirable example of the value of preventive medicine and hygienic methods. In 1859 an inquiry was instituted into the mortality of the European and subsequently the Indian army and gaol and civil populations. It was ascertained as one result of the investigation that the ordinary death-rate of the British soldier had stood for a long period of time at the appalling figure of 84·6 per 1000 from 1800–30 and at 56·70 per 1000 from 1830–56. Certain sanitary changes and improvements in the housing, clothing, food, and discipline of the soldiers were then enforced and were followed by a signal decline in the death-rate, though marked by fluctuations. In 1886 it was 15·8 per 1000 and in 1895 15·26 per 1000, the intervening years showing slight fluctuations. The death-rate of the native army did not show so great a diminution, but here, too, there was improvement. In 1889 the death-rate was 12·94 per 1000 and in 1895 11·60. After referring briefly to the unfortunate spread of syphilis among our Indian troops Sir Joseph Fayrer concluded by an eloquent exhortation to his hearers not to consider that a knowledge of bacteriology, in spite of the magnificent work of bacteriologists, would solve all sanitary problems. There were, he pointed out, other factors of no less importance to be considered. While it was of the utmost significance that we should be able to demonstrate the actual cause, whether a micro-organism or not, on the other hand it was not of less importance that we should know all the conditions under which this cause became effective. It was not enough to know the seed: it was necessary that we should also know the nature of the soil and all the conditions which determined whether the seed was to grow and multiply or to remain inert and harmless. If we could learn how to destroy the seed of disease or sterilise the soil in which it attained its full development, or if we could neutralise the favouring conditions and so prevent or impede its growth, then we should have solved a great problem and conferred a lasting benefit on mankind. Much of this had already been done and the splendid work of Pasteur, Koch, Lister, Burdon Sanderson, and Sims Woodhead, among others, was almost daily adding to our knowledge of zymotic disease. It could not be doubted that the Sanitary Institute had contributed its share to the advance which public health had made since its foundation.

Earl BEAUCHAMP proposed a vote of thanks to the President and remarked that he was sorry that no member of the Government was present to have heard Sir Joseph Fayrer's views upon the subject of vaccination.

Councillor MARTINEAU seconded the motion, which was carried with acclamation.

CONFERENCES.

A conference of medical officers of health was held in connexion with the congress under the presidency of Dr. J. C. McVail, the substance of whose inaugural address we publish on page 849 of this issue.

A conference of municipal representatives was held under the presidency of Alderman Cook, chairman of the Health Committee of the Birmingham City Council, at which some interesting papers were read. Dr. J. F. J. Sykes, medical officer of health of St. Pancras, read a paper on the Dwelling Accommodation of the Working Classes in Large Cities, and Mr. E. Parkes, M.P. for Birmingham (Central Division), read a paper upon the Municipal Management of Public Slaughter-houses.

A conference of municipal engineers was presided over by Mr. T. de Courcy Meade, whose presidential address dealt with the By-laws concerned in the Construction of New Streets and Buildings.

A conference on Domestic Hygiene was presided over by Mrs. Beale, the Lady Mayoress, at which Miss Mary Sturge read a paper on the Claims of Childhood, which excited some discussion.

EXHIBITION OF SANITARY APPLIANCES.

In the evening of the opening day the Lord Mayor opened a Health Exhibition in Bingley Hall in the presence of members of the congress and many of the leading citizens of Birmingham. The exhibition, which included all descriptions of sanitary appliances, was illustrative of the advances which have been made during recent years in public health.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN thirty-three of the largest English towns 6520 births and 5072 deaths were registered during the week ending Sept. 24th. The annual rate of mortality in these towns, which had been 24·6 and 24·0 per 1000 in the two preceding weeks, further declined last week to 23·6. In London the rate was 21·6 per 1000, while it averaged 24·9 in the thirty-two provincial towns. The lowest death-rates in these towns were 15·9 in Portsmouth, 16·2 in West Ham, 16·4 in Swansea, and 18·5 in Leicester; the highest rates were 32·4 in Manchester, 35·8 in Salford, 37·0 in Sunderland, and 38·7 in Gateshead. The 5072 deaths in these towns included 1454 which were referred to the principal zymotic diseases, against 1575 and 1545 in the two preceding weeks; of these, 1238 resulted from diarrhœa, 65 from whooping-cough, 51 from diphtheria, 45 from "fever" (principally enteric), 28 from scarlet fever, and 27 from measles. The lowest death-rates from these diseases were recorded in West Ham, Derby, Cardiff, and Portsmouth; and the highest rates in Bolton, Salford, Sunderland, and Gateshead. The greatest mortality from measles occurred in Plymouth; from whooping-cough and from "fever" in Sunderland; and from diarrhœa in Norwich, Salford, Bolton, Hull, Sunderland, and Gateshead. The mortality from scarlet fever showed no marked excess in any of the large towns. The 51 deaths from diphtheria included 29 in London, 5 in Swansea, and 4 in Liverpool. No fatal case of small-pox was registered during the week under notice in any of the thirty-three large towns; and only 1 small-pox patient was under treatment in the Metropolitan Asylum Hospitals on Saturday last (Sept. 24th). The number of scarlet fever patients in these hospitals and in the London Fever Hospital on the same date was 2353, against 2240, 2300, and 2319 on the three preceding Saturdays; 288 new cases were admitted during the week, against 238, 273, and 242 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 130 and 135 in the two preceding weeks, further rose to 157 last week, but were 19 below the corrected average. The causes of 50, or 1·0 per cent., of the deaths in the thirty-three towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leicester, Bradford, Leeds, Newcastle-upon-Tyne, and in eleven other smaller towns; the largest proportions of uncertified deaths were registered in West Ham, Birmingham, Preston, and Huddersfield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 23·0 and 18·8 per 1000 in the two preceding weeks, rose again to 19·7 during the week ending Sept. 24th, but was 3·9 per 1000 below the mean rate during the same period in the thirty-three large English towns. The rates in the eight Scotch towns ranged from 13·6 in Perth and 14·1 in Aberdeen to 20·1 in Edinburgh and 21·4 in Glasgow. The 595 deaths in these towns included 104 which were referred to diarrhœa, 22 to whooping-cough, 13 to "fever," 7 to diphtheria, 6 to scarlet fever, and 4 to measles. In all, 156 deaths resulted from these principal zymotic diseases against 140 and 157 in the two preceding weeks. These 156 deaths were equal to an annual rate of 5·2 per 1000, which was 1·6 below the mean rate last week from the same diseases in the thirty-three large English towns. The fatal cases of diarrhœa, which had increased from 81 to 110 in the

three preceding weeks, declined to 104 last week, of which 55 occurred in Glasgow, 20 in Edinburgh, 13 in Dundee, and 7 in Greenock. The 22 deaths from whooping-cough exceeded by one the number in the preceding week, and included 10 in Glasgow, and 5 in Aberdeen. The deaths referred to different forms of "fever" which had been 9 in each of the five preceding weeks, rose to 13 last week, of which 6 occurred in Paisley, 4 in Glasgow, and 2 in Edinburgh. The 7 fatal cases of diphtheria showed a further increase upon those recorded in recent weeks, and included 5 in Glasgow; and of the 6 deaths from scarlet fever 4 occurred in Edinburgh and 2 in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 100 and 68 in the two preceding weeks, rose again to 85 last week, but were 11 below the number in the corresponding period of last year. The causes of 29, or nearly 5 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 30·7 and 27·1 per 1000 in the two preceding weeks, further declined to 27·0 during the week ending Sept. 24th. During the past four weeks the rate of mortality in the city averaged 28·1 per 1000, the rate during the same period being 22·0 in London and 19·5 in Edinburgh. The 181 deaths registered in Dublin last week were within one of the number in the preceding week, and included 32 which were referred to the principal zymotic diseases, against 54 and 35 in the two preceding weeks; of these, 20 resulted from diarrhœa, 6 from "fever," 4 from whooping-cough, 1 from measles, 1 from scarlet-fever, and not one either from small-pox or diphtheria. These 32 deaths were equal to an annual rate of 4·8 per 1000, the zymotic death-rate during the same period being 5·1 both in London and in Edinburgh. The fatal cases of diarrhœa, which had been 38 and 26 in the two preceding weeks, further declined to 20 last week. The deaths referred to different forms of "fever," which had been 5 and 3 in the two preceding weeks, rose again to 6 last week, a higher number than in any week since March last. The 4 fatal cases of whooping-cough corresponded with the number in the preceding week. The 181 deaths registered in Dublin last week included 61 of infants under one year of age, and 32 of persons aged upwards of sixty years; the deaths of infants showed an increase, while those of elderly persons showed a further decline from recent weekly numbers. One inquest case and 1 death from violence were registered; and 51, or nearly a third, of the deaths occurred in public institutions. The causes of 14, or nearly 8 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Surgeons: Benjamin G. Heather to the *Pembroke*, additional for disposal; E. R. Grazebrook to the *Empress of India;* and J. H. Fergusson to the *Thunderer*. Surgeons and Agents: Andrew Cluckie at Stranraer and Cairn Ryan, and Welby J. Anson at Whithaven.

ROYAL ARMY MEDICAL CORPS.

Major Maurice O'Connor Drury having joined at Netley on Sept. 23rd is posted to the Medical Division of the Royal Victoria Hospital. Lieutenant-Colonel Peyton proceeds from Holywood to Limerick for duty.

INDIA AND THE INDIAN MEDICAL SERVICES.

The services of Captain Deare, Officiating Civil Surgeon of Midnapore, are placed temporarily at the disposal of the Chairman of the Corporation of Calcutta. Mr. Fink, Officiating Civil Medical Officer of Bhagalpur, is appointed temporarily to act as Civil Medical Officer at Midnapore during the absence on deputation of Major Walsh, or until further orders. Colonel A. Stephen (Bengal), Principal Medical Officer and Sanitary Commissioner, Assam District, is appointed to officiate as Inspector-General of Civil Hospitals, Punjab, during the absence on furlough of Colonel D. O'C. Raye until further orders. The services of Major Bannerman are replaced at the disposal of the Government of India.

VOLUNTEER CORPS.

Artillery: 1st Cornwall (Duke of Cornwall's) (Western Division, Royal Artillery): John Alfred Fox is re-appointed Surgeon-Lieutenant. *Rifle:* The Queen's Rifle Volunteer Brigade, the Royal Scots (Lothian Regiment): The undermentioned Surgeon-Lieutenants to be Surgeon-Captains:—J. A. Clark, A. Macdonald, C. B. Ker, and J. Pirie. 1st Volunteer Battalion the Royal Sussex Regiment: Surgeon-Lieutenant C. J. Jacomb-Hood to be Surgeon-Captain. 5th Volunteer Battalion the Durham Light Infantry: Surgeon-Lieutenant A. A. Abraham to be Surgeon-Captain.

THE VOLUNTEER AMBULANCE SCHOOL OF INSTRUCTION.

The following officers have recently passed the proficiency examination for volunteer medical officers, thereby earning the higher capitation grant for the corps and becoming entitled to promotion after completing the necessary period of service:—Surgeon-Major W. H. Webb, 5th Volunteer Battalion Devonshire Regiment; Surgeon-Lieutenant J. Jackson Clarke, Commanding Bearer Company, North London Volunteer Brigade; Surgeon-Lieutenant W. G. Owen, 1st Cheshire and Carnarvonshire Volunteer Artillery; Surgeon-Lieutenant R. Mair, 1st Roxburgh and Selkirk Rifle Volunteers; Surgeon-Lieutenant G. Black, 2nd Volunteer Battalion Royal Sussex Regiment; Surgeon-Lieutenant J. A. Wilson, 3rd Volunteer Battalion Highland Light Infantry; Surgeon-Lieutenant H. Syers, 3rd Middlesex Volunteer Artillery; Surgeon-Lieutenant C. S. de Segundo, 20th Middlesex (Artists) Rifle Volunteers; Surgeon-Lieutenant F. S. Hogg, 20th Middlesex (Artists) Rifle Volunteers; Surgeon-Lieutenant E. Goddard, 9th Middlesex (Harrow) Rifle Volunteers; Surgeon-Lieutenant A. Duke, 1st Tynemouth Volunteer Artillery; Surgeon-Lieutenant E. C. Palmer, 1st Volunteer Battalion Lincolnshire Regiment; Surgeon-Lieutenant J. D. Farquharson, 1st Newcastle-on-Tyne Volunteer Artillery; Surgeon-Lieutenant D. J. Lawson, 1st Dorsetshire Volunteer Artillery; Surgeon-Lieutenant J. N. Brown, 5th West Middlesex Rifle Volunteers; Surgeon-Lieutenant D. R. Dobie, 2nd Volunteer Battalion the King's Scottish Borderers; Surgeon-Lieutenant C. J. Beattie, 16th Middlesex Rifle Volunteers; Surgeon-Lieutenant I. McBourke, 18th Middlesex Rifle Volunteers; Surgeon-Lieutenant H. L. Wilks, 1st Wiltshire Rifle Volunteers; Surgeon-Lieutenant W. Boyd, 1st Volunteer Battalion the Royal Scots Fusiliers; Surgeon-Lieutenant P. Shaw, 1st Volunteer Battalion Highland Light Infantry; Surgeon-Lieutenant A. Abraham, 5th Volunteer Battalion the Durham Light Infantry; Surgeon-Lieutenant W. J. Edwards, Tees Division Submarine Miners Royal Engineer Volunteers; Surgeon-Lieutenant E. G. Peck, 2nd West Riding of Yorkshire Volunteer Artillery; Surgeon-Lieutenant D. King-Smith, 48th Highlanders of Canada; Surgeon-Lieutenant R. L. Clark, 1st Cumberland Volunteer Artillery; Surgeon-Lieutenant S. L. Potter, 1st Volunteer Battalion the King's Own Yorkshire; Surgeon-Lieutenant E. V. Eames, 1st Volunteer Battalion the Derbyshire Regiment; Surgeon-Lieutenant J. C. Fenwick, 3rd Volunteer Battalion the Durham Light Infantry; Surgeon-Lieutenant J. G. Ronald, 4th Volunteer Battalion the Argyll and Sutherland Highlanders; Surgeon-Lieutenant W. H. Vickery, 3rd Volunteer Battalion the Northumberland Fusiliers; Surgeon-Lieutenant E. Farr, 2nd Volunteer Battalion Middlesex Regiment; Surgeon-Lieutenant R. Shearer, Robin Hood Rifle Volunteers; and Surgeon-Lieutenant F. Grindon, Bearer Company, Home Counties Volunteer Brigade.

THE RED CROSS SOCIETY AND THE NILE CAMPAIGN.

The *Mayflower*, a stern-paddle steamer, 140 ft. long, has been chartered by the National Society for Aid to Sick and Wounded in War (the British Red Cross Society) to convey sick and wounded soldiers from the Soudan between Assouan and Cairo. She carries two medical officers and eight men of the Royal Army Medical Corps, lent by the Government, and two nurses sent out by the society. Reconstructed from a pleasure vessel into a hospital ship to hold 52 sick and wounded and on an emergency 72 patients, she is fitted out with the most modern medical and surgical appliances and medical comforts of every description. The sick and wounded will thus enjoy the luxury of being conveyed by river, and will be saved the heat, choking dust, and the severe discomforts of the railway journey of about 600 miles between Assouan and Cairo, which a high authority has described as the worst part of the transit between Khartoum and Cairo. The ship was inspected by the general officer

commanding, and she started on Sept. 6th on her first voyage of mercy, leaving Assouan for Cairo on Sept. 15th with twenty-eight wounded and twenty-four sick, including the following officers: Molyneux, Hopkinson, Clark, Geoghegan, Sloggett, and Dyke.

WINTER SESSION OF THE ARMY MEDICAL SCHOOL, NETLEY.

The seventy-seventh session of the Army Medical School will commence on Monday, Oct. 3rd. The surgeons on probation will join at Netley on Oct. 1st. The following are the lists of those who are to attend the school, having obtained places at the recent competition. In addition to these gentlemen we understand that others will attend the school, sixteen nominations having been offered among the medical schools of the United Kingdom under Article 350 of the Pay Warrant.

ROYAL ARMY MEDICAL CORPS.

F. Warren.	G. W. G. Jones.
J. E. Hodgson.	J. W. H. Houghton.
H. P. W. Barrow.	H. S. Taylor.
M. H. G. Fell.	A. L. Scott.
T. C. Lauder.	J. W. Leake.
J. G. Gill.	R. H. Lloyd.
W. B. Winkfield.	D. E. Curme.
G. H. Goddard.	G. M. Goldsmith.

INDIAN MEDICAL SERVICE.

J. C. H. Leicester.	L. E. L. Parker.
H. Innes.	T. S. Ross.
W. S. Willmore.	J. N. Walker.
L. T. R. Hutchinson.	D. C. Kemp.
A. E. Walter.	V. H. Roberts.
C. Hudson.	J. E. Robinson.
A. M. Fleming.	G. P. T. Groube.
H. M. Cruddas.	G. King.
C. F. Weinman.	P. P. Atal.
E. L. Ward.	W. McM. Pearson.

A PEERAGE FOR THE SIRDAR.

Medical officers, in common with everybody else, will have been much gratified at the announcement that the Queen has been pleased to confer the dignity of a Peerage of the United Kingdom upon the Sirdar, Major-General Kitchener, in recognition of his brilliant military services in Egypt, more especially in connexion with his late battles at Atbara and Omdurman and the taking of Khartoum. The Sirdar has been very thorough in all that he has undertaken, he is a first rate organiser, and has shown that he possesses strategical and tactical skill of no mean order. He has successfully carried out his intentions with what may be fitly termed a scientific precision, which reflects great honour and credit on the scientific corps to which he belongs and awakens the sympathetic admiration of the other scientific branches of the service and of the army in general. It was fitting that he should receive a national recognition of the services which he has rendered to the Queen and to the country.

THE INDIAN TROOPING SEASON AND THE ROYAL ARMY MEDICAL CORPS.

The *Times of India* of Sept. 10th announces the following as the order in which the officers of the Royal Army Medical Corps will proceed home this trooping season:—

Term expired, in Nubia, Oct. 7th—Majors Lucas and Stables and Captains Mason and Potter; Simla, Oct. 14th—Majors Russell and Baird and Captains Poole and Faichnie; Dilwara, Nov. 11th—Majors Gerrard and Birch and Captains Knaggs and Begbie; Dunera, Nov. 26th—Majors Kirkpatrick and James and Captains Tacker and Buist; Nubia, Dec. 8th—Majors Winter, Anderson, and Hathaway, and Captain Alexander; Simla, Jan. 3rd—Majors Nichol, Johnston, and Daly, and Captain Crawford; Dilwara, Jan. 13th—Majors Nicholson, Burtchaell, and Fryer, and Captain Symons; Dunera, Jan. 20th—Lieutenant-Colonel Thomsett, Majors Mills and E. Davies, and Captains Holt and Lawson; Nubia, Feb. 10th—Lieutenant-Colonel Bennett, Majors Cree and Skinner, and Captains Buchanan and Hennessy; Simla, March 3rd—Majors Poole, Keogh, and Melville, and Captains Pilcher and Tyacke; Dilwara, March 18th—Lieutenant-Colonel May, Majors Wills and Woodhouse, and Captains Faichnie and Kellie; Dunera, March 29th—Lieutenant-Colonel Anderson, Majors Fitzgerald and A. M. Davies, and Captains Withers and Martin.

THE KHYBER.

The improvement in the general health of the troops in the Khyber still continues and their health may now be said to be fairly good. The question of the control of the Khyber and the settlement of the frontier has been referred home to the Secretary of State for final decision. It is practically settled that the control will be handed over from the Punjab to the Imperial Government and that a large fort will be built at the entrance of the Khyber Pass.

The following officers of the Royal Army Medical Corps will, under the terms of the Royal Warrant, retire from the Army this month: Lieutenant-Colonel A. Anderson (Madras), Surgeon-General J. B. Hamilton, P.M.O., Western District, and Lieutenant-Colonel R. H. Robinson.

Lieutenant-Colonel C. Swaine, I.M.S., has been confirmed as Principal Medical Officer, Hyderabad Contingent.

Correspondence.

"Audi alteram partem."

"THE PLAISTOW MATERNITY CHARITY."

To the Editors of THE LANCET.

SIRS,—It was perhaps excusable that Mr. F. R. Humphreys should have fallen into the error which produced his lengthy letter in THE LANCET of Sept. 24th; it is comprehensible that, having fallen into this error, he should have communicated his opinion on the subject to THE LANCET: but that he should, on such slight grounds, have attacked a large and representative body of his brother practitioners with that species of sneer concerning the filling of pockets which is most often heard amongst the more ignorant section of the laity, is hardly either excusable or comprehensible.

The action of the individual practitioner quoted and commented upon by Mr. Humphreys was never advocated or endorsed by the Executive Council. The incident was related to THE LANCET Commissioner and repeated by him, not as an example of the methods of the society, but rather as an illustration of the extremely unsatisfactory state of things fostered by the abuses at present prevalent in the system of the Plaistow Maternity Charity—a state of things which might easily lead an individual practitioner to a course of action which on reflection he might regret.

If Mr. Humphreys will make himself acquainted with our official methods and literature he will recognise that his fulminations concerning men "bound by rules which disregard everything but the pecuniary necessities of trade" are irrelevant and somewhat ridiculous. The members of our society are bound by no rules whatever as to personal conduct, except those of the generally accepted unwritten codes of personal honour and professional ethics.

In conclusion, I may state that I shall be glad to forward copies of the registered objects and rules of the society to any medical man who is interested in the subject.

I am, Sirs, yours faithfully,

MURTAUGH HOUGHTON,
Hon. Secretary, East Suburban Medical Protection and Medico-Ethical Society, Limited, West Ham Hospital, E.

Sept. 27th, 1898.

THE OPERATIVE TREATMENT OF MYOPIA.

To the Editors of THE LANCET.

SIRS,—To those who during the last few years have taken some pains to test the value of this method of treatment Dr. Kenneth Scott's[1] reasons for condemning it will appear wholly inadequate. These he sums up in the concluding paragraph of his article:—

The method of treatment in question is one which is avowedly sound in theory and also quite feasible in practice, but it is absolutely imperative that it should be entirely regarded from the patient's point of view, and *consequently* should be placed in abeyance until the operation for the extraction of the lens from the eye by whatever method has been resolved into one which is entirely free from all risk of the onset of any after inflammation.

That this and every other treatment should be considered entirely from the patient's point of view is a platitude, but the conclusion that the writer draws from it is surely unsound. If absolute freedom from risk is to be a *sine quâ non* of an operation every surgical proceeding will "remain in abeyance" till the Greek Kalends. It is for the surgeon to weigh the risks and advantages of the treatment and to place them before the patient in such a way that he may be able to form a wise decision.

Dr. Scott compares the operation for high myopia with that of the extraction of a senile cataract and because failure occasionally results from the latter he thinks the former should not be attempted. The failures after extraction, however, are under 5 per cent., the patients are all past middle life, and many of them are in feeble health. There

[1] THE LANCET, Sept. 24th, 1898, p. 805.

is, moreover, little analogy between the operation of extraction and that of discission with subsequent evacuation of the lens matter, which is the recognised proceeding for high myopia. It will seem to most who have seriously considered the subject that the chief question to be considered is that which has been excluded by Dr. Scott—namely, Does the operation render the eye more liable to detachment of the retina? The treatment has been extensively practised both on the continent and in this country and the results hitherto have been very satisfactory. It not merely enables many patients to dispense with glasses—in itself a great boon to individuals in some walks of life—but it gives them good vision without glasses in place of bad vision with them.

It is, of course, possible that in after years eyes operated on in this manner may go wrong; there does not, however, seem to be any reasonable ground for such an apprehension. Such an objection might be urged with equal force against any new proceeding, but we shall best consult the interests of our patients, not by refusing to adopt new methods on account of objections which are purely hypothetical, but by adopting them cautiously and selecting at first only the most promising cases. Although I am myself much impressed with the value of this treatment in suitable cases I think it prudent at present to confine it to one eye.

I am, Sirs, yours faithfully,

Cavendish-square, W., Sept. 26th, 1898. W. ADAMS FROST.

EAST LONDON WATER.

To the Editors of THE LANCET.

SIRS,—The following is a report on a series of samples taken at 6, Holly-road, Leytonstone. Five samples were taken: the first on Sept. 9th at 7.30 A.M.; the second on Sept 11th at 12 noon; the third on Sept. 12th at 2 P.M.; the fourth on Sept. 14th at 8.30 A.M.; and the fifth on Sept. 19th at 8.15 A.M. The samples were taken with the following precautions: six bucketfuls of water were drawn from the tap on the service pipe and a sample was then taken in a vessel sterilised at 160° C. for an hour. A given quantity was then measured off in a sterilised pipette and added to a tube of liquefied gelatin and plated; the plates were incubated at from 20° to 23° C. The colonies were enumerated upon the second day. The gelatin used was 10 per cent. gelatin in nutrient broth (0·5 kilo. of meat per litre) and with an alkalinity of 3 c.c. normal NaOH per litre. The amount of water taken varied from 0·5 to 0·05 c.c.

Sample 1, taken on Sept. 9th at 7.30 A.M. 0·5 c.c., 0·2 c.c., and 0·1 c.c. were added to liquefied gelatin and plated; 0·5 c.c. of the sample was also treated by the method of Pakes for the detection of the coli group. On Sept. 10th 0·5 c.c. and 0·2 c.c. were entirely liquefied, and in 0·1 c.c. the colonies were so close as to be almost uncountable; from enumerations of portions of the plate more than 15,000 were estimated to be present per c.c. The portion of the sample treated by Pakes's method and subsequently plated gave flat, thin, greyish-white colonies with irregular edges. The organism thus isolated is slightly motile, does not stain by Gram's method, gives a large quantity of gas, does not liquefy gelatin, and produces acid. It is therefore referable to the coli group.

Sample 2, taken on Sept. 11th at 12 noon. 0·1 c.c., 0·1 c.c., and 0·05 c.c. were added to liquefied gelatin and plated. On Sept. 13th 0·1 c.c. and 0·1 c.c. were liquefied. 0·05 c.c. = 100 colonies—i.e., an estimation of 2000 per c.c.

Sample 3, taken on Sept. 12th at 2 P.M. 0·05 c.c., 0·01 c.c., and 0·1 c.c. were added to liquefied gelatin and plated. On Sept. 14th the colonies were enumerated as follows: 0·01 c.c., 4; 0·05 c.c., 20; and 0·1 c.c., 42; total 66 = 412 per c.c.

Sample 4, taken on Sept. 14th at 8.30 A.M 0·1 c.c., 0·1 c.c., and 0·1 c.c. were added to liquefied gelatin and plated. On Sept. 16th the colonies were enumerated as follows: 0·1 c.c., 20; 0·1 c.c., 23; and 0·1 c.c., 19; total 62 = 200 per c.c.

Sample 5, taken on Sept. 19th, at 8.15 A.M. 0·2 c.c., 0·1 c.c., and 0·1 c.c. were added to liquefied gelatin and plated. On Sept. 21st the colonies were enumerated as follows: 0·2 c.c., 80; 0·1 c.c., 40; and 0·1 c.c., 50; total 170 = 475 per c.c.

I therefore claim from the foregoing that (1) the number of organisms present per c.c. is a constantly variable quantity and may vary from 15,000 to 200 in a few days, a fact pointed out by other observers; (2) that on one occasion at least—e.g., Sept. 9th—the numbers were abnormally high; and (3) that on one occasion—Sept. 9th—organisms of the coli group were present in 0·5 c.c. of water.

I am, Sirs, yours truly,

KENNETH W. GOADBY.

Bacteriological Laboratory, Guy's Hospital, Sept. 28th.

"ITALY AND POLITICAL ASSASSINATION."

To the Editors of THE LANCET.

SIRS,—In your excellent leading article on the above subject there is one statement which in fair criticism, and I am sure you do not object to such, I must protest against with all my heart and soul and strength and mind, as it is contrary to fact, insulting (no doubt unintentional) to every loyal Roman Catholic, and a libel upon his Church. These are the words I object to: "Given the much-abused resource of the confessional, which whitewashes crime and rehabilitates the criminal on easy terms." This is one of the "conditions" from which you drew the inference that Italy is Senior Wrangler in, and is the nursery of, political assassination. To speak of the Sacrament of Penance whitewashing crime, &c., could only be a delusion on the part of those who had no knowledge of it. I take it for granted, Sirs, that in the opinion of every unprejudiced English judge or gentleman your Catholic readers and subscribers can speak the truth and are as worthy of belief in matters of fact as are any of their Protestant *confrères*, and I am sure they would repudiate your postulate as too absurd for Continental consumption and if uttered by an apostate of their own Church as blasphemous. Roman Catholics are in a minority in this country, Sirs, but minorities have rights, and when such a widely-read and excellent journal as THE LANCET traduces and insults their holy religion, whilst in the next breath it blesses and curses everything that they bless and curse, it is time for them to rub their eyes and protest against this want of proper accommodation and insular view of Peter and his keys. Sirs, if I have in any measure lifted the veil from your congenital myopia as regards the Sacrament of Penance, against which the gates of anarchy have never prevailed and never will prevail, God be thanked. The first step to anarchy, and the final loss of the Image of God and the gain of the stamp of hell, is due to the abandonment of the Sacrament of Penance by the anarchist. He has not even the remorse of Judas. Is he mad? Probably he is. Italy is reaping the whirlwind of her persecution of the Church and the Pope. Her anarchists as well as those of Spain find refuge in England. The right of asylum, except it be a lunatic one, to such outlaws is not fair to other nations. We may have to do penance for it yet.

I am, Sirs, yours faithfully,

R. G. MCCALMAN, M.D., C.M. Aberd.

Coldharbour-lane, S.E., Sept. 22nd, 1898.

*** We print the above letter, but our correspondent should understand that THE LANCET is a purely professional journal which does not interfere in questions of faith or general politics. The reflection was intended to apply to unworthy members of the Roman Catholic Church who abuse the rites of that communion.—ED. L.

ROYAL MASONIC INSTITUTION FOR GIRLS.

To the Editors of THE LANCET.

SIRS,—As candidates for the election of Oct. 13th I notice the names of two daughters of deceased surgeons and of one daughter of a deceased hospital steward. Many medical brethren would doubtless wish to support them. If any Masons care to send me their balloting papers duly signed I shall be pleased to divide the votes equally between the three candidates in question and so avoid waste.

I am, Sirs, yours faithfully,

F. TAYLOR SIMSON, Past Master.

Craven House, Northumberland-avenue, W.C., Sept. 26th, 1898.

UPLAND VILLAGE WATER-SUPPLIES.

To the Editors of THE LANCET.

SIRS,—Will your readers who reside in our large towns credit the following? The parish of Southstoke-cum-Woodcote, with a population of about 700, is situated partly

on the banks of the Thames and partly on the Chiltern Hills in Oxfordshire. The Woodcote division, with a population of between 200 and 300 souls, lies about 400 ft. above and 3 miles away from the river. The cottagers depend for water upon the drippings from their thatched or tiled roofs and upon roadside ponds filled in winter by the washings from the fields and from the highway. At the present time both ponds and tanks are absolutely dry and water has to be fetched from the river or from lowland wells, involving daily journeys of from six to eight miles. A deep well might be bored, from which an ample supply could be secured, but this has been opposed partly on the ground of expense and partly on the plea that the existing sources have been "satisfactory" for many years and that no excessive amount of disease has prevailed.

The inhabitants can see no objection to the use of roadside pond water for drinking purposes, but now that the ponds are absolutely dry they are inclined to consider the matter. But they are by no means unanimous as to discarding their beloved ponds and substituting a deep well instead.

In my opinion surface drainage from cultivated fields and high roads must always be a dangerous source from which to obtain drinking-water, but it would be of interest to hear the opinions of men who have given special attention to the question of water-supplies. It is stated that the medical officers of health in various districts similar in situation and water-supply to our own do not consider it imperative to condemn the roadside pond. Should you be able to insert this communication possibly some useful replies may be forthcoming. I am, Sirs, yours faithfully,

CHARLES REINHARDT, M.D. Brux., L.S.A. Lond.

Southstoke, Oxon., Sept. 27th, 1898.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Further Abandonment of Restrictive Plague Measures.—Comparative Mortality of the Diseases causing most Deaths.—Future Plague Policy.—Antitoxin Serum.—The Sanitary Commissioner's Report.

THE station master at Poona has received orders, to date from Sept. 7th, not to issue a ticket to any person without the production of a pass from the plague authority. This edict is to apply without distinction to all, Europeans and natives alike. Considering that there is no indigenous plague in Poona such an indiscriminate rule must only raise opposition to plague measures and, like dozens of other hard and fast regulations, will have to be modified sooner or later. I made the above note two days ago and now it is announced that the Bombay Government have decided to abandon the system of passes as well as that of detention camps. The detention camps were costly and unsatisfactory and the system of passes was almost unworkable. This action may be criticised on strictly sanitary grounds, but under all the circumstances it has become not only justifiable but imperative. The prospect of plague being among us for a number of years compels the abandonment of quarantine except for a limited period. Theoretical sanitarians imagined that the system would prove completely efficacious, but practically it has not been so and we are now confronted not only with a rising plague mortality, but with a reappearance and spread of the disease in various districts of the Mofussil.

At certain places a rigid medical inspection of travellers will be conducted. This will secure the obviously sick and the suspiciously sick and will doubtless deter all except the healthy from travelling. It is probable that the necessity for economy of expenses has determined this new policy. It was impossible that the previous rate of expenditure could last long. Every place was being ruined and the excessive inconvenience to which traders were subjected was more than desirable except for a temporary period.

Now that plague has come among us—and apparently to stay—it is interesting to note some of the figures in the Sanitary Commissioner's Report. What with plague, cholera, and famine the deaths in the Bombay Presidency for 1897 rose to 749,916, or 153,444 more than in 1896, giving a rate of 39·84 per mille, the decennial mean being 29·56. The birth-rate was low—33·46, there being 62,154 fewer births than in the previous year.

Cholera caused 57,109 deaths and plague 46,944. While deaths from plague in Bombay city are shown at only 10,237, the mortality of the year exceeded the quinquennial average by 22,666. Part of this excess was doubtless due to plague. It is to be observed that even then plague would not be shown to be more destructive than cholera. The deaths from dysentery and diarrhœa show an increase of no less than 49,920 over those of the previous year. But in India we deal with large figures. From its first appearance to the present time—a period of two years—plague has claimed over 100,000 victims, but cholera in 1896 alone caused 471,779 deaths, small-pox carried off 141,443 people, and "fevers" showed the enormous mortality of 4,578,944. Dysentery and diarrhœa are entered for 240,189 deaths, and while a separate return is not made for phthisis its prevalence and fatality are known to be extreme. The fear of plague may be over-estimated. Being strange to us and being attended with such a high mortality it created panic. We have come to regard cholera and consumption, fevers and dysentery, with such inevitableness that we fail to recognise that they are much more serious than plague. Then, again, there was the fear among sanitarians that plague would spread all over India. After two years it is still almost entirely confined to the Bombay Presidency. In the olden days, when nothing in the way of sanitation was in vogue, plague pursued its course unchecked; and from a study of outbreaks we find that it moved slowly—it spread slowly and while it frequently repeated itself in several places it did not extend over very large areas. The western part of India has always been chiefly attacked. It is reported that Dr. Simond, working with serum prepared by Dr. Roux at the Pasteur Institute, Paris, has obtained 47 per cent. of cures. It is stated, however, that no results have been obtained in the so-called pneumonic cases or in those cases where the generalisation of the microbe either in the lymphatic system or in the blood took place before the treatment. Under these circumstances I do not consider the result satisfactory because in hospitals 50 per cent. die within forty-eight hours, and of those who live over three days 50 per cent. recover. I am unable to report any further progress in the treatment of plague from any other quarter. Prophylactic inoculation is practically at a standstill both in Bombay and Calcutta.

Sept. 9th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The New Thompson-Yates Laboratories of Physiology and Pathology in University College, Liverpool.

THE development of the Liverpool Medical School has steadily progressed since its establishment in 1834. On the foundation of University College, Liverpool, in 1881, the Royal Infirmary School of Medicine (as the medical school was then termed) was incorporated with that body, becoming its medical faculty. In 1884 University College became an integral part of the Victoria University as one of its affiliated colleges, and since that time the history of the medical faculty has been one of continued success. The endowments of the chairs of anatomy, physiology, and pathology, were quickly followed by the gifts of the Tate Library, the Gossage chemical laboratories and Ashton Hall, the gift of the late Mr. George Holt, which that gentleman fully equipped for the use of the pathological department pending its removal to larger premises, and which in future will be known as the School of Hygiene, and, lastly, came the new laboratories of physiology and pathology, the noble gift of the Rev. S. A. Thompson-Yates, which are to be opened by Lord Lister on Oct. 8th. All these improvements show the great strides made in Liverpool in recent years in the direction of the advancement of medicine and its collateral sciences. The Thompson-Yates laboratories are located in a handsome building within the precincts of the grounds of University College. There is a spacious entrance-hall with tiled pillars extending all the way up the main staircase, a basement, ground floor, first and second floors and three mezzanines adjoining the main staircase. The ground floor is L-shaped, with the object of admitting a greater amount of window space than could be obtained by a rectangular form of building. This floor will be devoted to the department of pathology, and it contains the morbid histology class-room, 56 ft. in length by 26 ft. in breadth, to accommodate sixty students. This room opens at one end into the

pathological museum which has been considerably enlarged. In another part of the ground-floor is the bacteriological room, 53 ft. in length by 19 ft. in breadth; the benches in this room are covered with opaline tops as a sanitary precaution against the absorption of infective materials. Close by are rooms for pathological chemistry, pathological private research, a constant-temperature room for experimental pathology, and a room for photography. The large theatre is situated on the first floor and will accommodate 180 students. In winter the theatre will be devoted to physiology and in summer to pathology. The arrangements in the theatre are simply admirable. There is a liberal supply of electric lights, an interesting feature of which is an adjustable horizontal aerial bar which can be tilted round in any direction so as to bring the light to bear on any requisite object. There is also a switch at the back of the theatre for use with an arc lamp. On this floor is also situated the large physiological chemical laboratory, the best lighted room in a well-lighted building. Close by are the preparation, the research, and the electrical rooms. There is a large room for classes in recording drum work, each student in which will be provided with one of Professor Sherrington's drums. The histology class-room on the second floor is 60 ft. by 40 ft. and will accommodate 80 students, each of whom will be supplied with his own gas, water, electric light and microscope. This room is well lighted, and there is also an aquarium at one end. The north wing on the top floor contains the small animal room (the windows of which are guarded by wire cages), the preparation room, a combustion room, and a photograph room. The basement contains a cold storage room kept cool by the ammonia process, also a laboratory for the work of the clinical investigation society, and other rooms for experimental work. There is also on the basement a student's common room which can be altered in such a manner as to meet the purposes of a debating society. The laboratories are splendidly equipped all through and will afford every opportunity for the study of modern research. It is possible to say that the Thompson-Yates Laboratories of Physiology and Pathology in University College, Liverpool, are certainly equal to, if they are not superior to, any other institution of the kind in the kingdom and that they cannot be surpassed either here or on the Continent. Liverpool in particular and the community in general are much indebted to the noble generosity of the Rev. S. A. Thompson-Yates for the gift of this valuable building and its equipments, upon which he has expended the large sum of £35,000. The architect is Mr. A. Waterhouse, R.A., of London, who also designed the Liverpool Royal Infirmary.

Sept. 27th.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Belfast Drainage System.

AT a joint meeting of the Improvement and Public Health Committees of the Belfast City Council held on Sept. 20th it was decided that a systematic test of all the drains should be made and that a weekly return of the drains so tested should be made to the two committees. I am afraid that unless a very large staff is appointed this will take a long time to accomplish. The addition of from three to six additional inspectors as proposed in order to efficiently carry out the work is not by any means sufficient. The following returns brought before the Improvement and Public Health Committees on the same date show a deplorable laxity in the prevention of insanitary defects. It appears that 4279 new houses were built during the past two years and of these only 1279 had the drains tested by water or smoke, while 3000 houses, although passed, have not had the drains tested. I trust that the corporation at its meeting on Oct. 1st will confirm this resolution passed at the combined meeting of the Public Health and Improvement Committees, insisting on the systematic and thorough testing of all the drains of houses in Belfast.

The Belfast Guardians and the Medical Profession.

Dr. E. C. Bigger having made a satisfactory report to the guardians of Belfast in reference to the treatment of fever patients in their hospital, in which he dispelled the impression conveyed in one of the papers that patients sent into the Union Fever Hospital and certified to be suffering from fever, but in whose cases the diagnosis may be wrong, are exposed to infection by being placed in a ward where other patients are so suffering, a most extraordinary discussion followed, in which some members of this truly remarkable board surpassed themselves in the violence of their attack on the medical profession. One guardian said he would suggest that Dr. Bigger should separate these classes in his list—the typhus fever cases, the typhoid fever cases, and those who were sent in for the purpose of getting the medical men the half-crowns. He also said that the "iniquitous system" (money paid for the notification of infectious diseases) was a "perfect swindle," while another guardian said that the medical men outside (in the city) were reaping a perfect harvest (i.e., notifying cases), and he added, "the doctors were great scoundrels"; and on being mildly asked by a medical guardian to withdraw that expression he boldly replied, "I'll withdraw nothing." One of these gentlemen who attacked the medical profession is reported in the public press to have remarked, in reference to an article which appeared in a Belfast newspaper dealing with the workhouse graveyard, that knowing the ground well "he would say there was just a sufficient ground of truth in the article to keep him from calling it a d——d lie from beginning to end." Truly, the Belfast guardians form a wonderful board!

The Health of Belfast.

For the week ended Sept. 17th the death-rate from all causes in Belfast was 30·6 and from the principal zymotic diseases 12·2. There were 247 cases of typhoid fever notified during the week, or 23 less than the previous week, and 341 less than the week before that. For the same week it appears from the Registrar-General's table that the total births and the total deaths in Belfast were the same—179. These figures, I regret to say, show an extremely bad state of affairs, for although, as compared with the previous week, there were fewer cases of typhoid fever notified (247 as against 270), the general death-rate has gone up from 27·9 to 30·6, and the mortality from zymotic disease has increased from 10·8 per 1000 to 12·2, which is really appalling. At the present time Dr. Lorrain Smith is making a most careful bacteriological examination of the water-supply of Belfast to see if it has any bearing on the typhoid fever epidemic, but up to the present no definite results have been announced. It is interesting to note that in the present outbreak of typhoid fever in Belfast Widal's reaction has in many cases failed, and in some of the fatal cases in whom during life Widal's test could not be obtained the spleen removed at the post-mortem examination has been subsequently found to teem with bacilli. This most interesting scientific observation would seem to confirm similar results observed in reference to certain recent outbreaks of enteric fever in England.

Ballycastle Sanitary Officer.

At a meeting of the Ballycastle Board of Guardians, held on Sept. 24th, Mr. Ewing was elected consulting sanitary officer.

Lunacy in Ireland.

It would appear from the forty-seventh report of the inspectors of lunacy in Ireland that lunacy there, as in England and Wales, is on the increase. On Jan. 1st the number of persons known to be insane in Ireland was 19,588, as against 18,966 in 1897. They were distributed as follows: 14,598 are detained in the district or county asylums; 170 in the Central Asylum, Dundrum; 691 in private asylums at the expense of relatives; 4030 in the workhouses; only 3 in prisons; and there were 96 single Chancery patients in unlicensed houses.

Sept. 28th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Diagnosis of a Bullet in the Subhyoid Region by Means of the X Rays.

M. CHOISEUL read a paper before the Academy of Medicine on Sept. 20th in reference to a case reported by Surgeon-Major Boisson and Surgeon-Major Mercus. The patient was a soldier who during an hysterical attack shot himself in presence of his family with a revolver

of 7 mm. calibre. The wound was in the neck. Hemiplegia followed together with constant pain in the subhyoid region which was increased by any attempt to swallow. Four weeks later he was seen by Surgeon-Major Boisson and Surgeon-Major Mercus. The scar was plainly visible but palpation gave no sign of the whereabouts of the bullet, so recourse was had to the x rays. Two skiagrams, taken respectively from the right and left sides, revealed a dark well-defined shadow situated at a point marked by a line joining the middle of the inferior border of the lower maxilla to the body of the hyoid bone and about one centimetre above the upper border of this latter. It was also evident that the foreign body was close to the skin upon the left side and thanks to these indications it was easily removed. The tissues were divided layer by layer until the hyoglossus was reached, when the bullet was seen and easily extracted. It weighed 3 grammes and was only slightly out of shape. The after progress of the case was uneventful and appropriate mental treatment entirely did away with the hysterical hemiplegia which had affected the patient since the accident.

The Abortive Treatment of Gonorrhœa.

At the same meeting of the Academy of Medicine M. Chauvel read sundry papers which had been sent in for the *prix Herpin* with reference to the abortive treatment of gonorrhœa. He came to the conclusion that these papers showed that there was no such thing as a really efficacious abortive treatment.

Mutiny at the Bicêtre Hospital.

On Sept. 24th 20 young patients at the Bicêtre Hospital, who were epileptic and were working in the locksmith's shop, broke out into open revolt. They all met contrary to the regulations, which prohibit any patient going into the shop except during working hours. When the attendants told them to go they refused and having armed themselves with the various iron implements which were lying about drove out the attendants and barricaded themselves in the shop. The chief of the hospital then sent for the firemen and the rebels, soaked with water, were easily disarmed by the attendants, who got in through the windows. The two ringleaders were handed over to the police.

The Cinematograph at the Faculty of Medicine.

M. Tuffier, Professor of the Faculty of Medicine and surgeon to the hospitals, has been using the cinematograph after the manner of Dr. Doyen to show the various phases of a surgical operation at his lectures. The photographs were all taken from the cases of M. Tuffier at the Pitié and the practical school of the faculty and the results were excellent.

An Ingenious Quack.

A most ingenious quack who was in the habit of "practising" with great success on board the boats running between Dover and Calais, has just been arrested in Paris. His method was as follows. He embarked on board the boat and during the crossing a woman, his accomplice, pretended to be violently seasick, so bad, indeed, that she collected around her a group of sympathising passengers. The swindler then turned up with a small bottle containing, as he affirmed, a drug of marvellous efficacy, which he offered to the sick lady. She having swallowed one mouthful declared herself miraculously restored. The bystanders never failed to ask the quack for his secret, and he, giving himself out as an inventor who was going to England to dispose of his patent, said that nevertheless for humanity's sake he would dispose of a few bottles of his medicine just before the boat arrived in port for the sum of 20 francs each. The silly people who bought them had thus no time to discover that the "drug" was only coloured water, an unlucky discovery reserved for their return voyage. This *chevalier d'industrie* was arrested while walking in Paris, where he was recognised by one of his dupes.

The Case of the Prince of Wales.

Dr. Lucas Championnière, the celebrated senior surgeon at the Beaujon Hospital and a member of the Academy of Medicine, has published in his paper, the *Journal de Médecine et de Chirurgies Pratiques*, under date August 10th, a noteworthy article entitled "The Prince of Wales and his Fractured Patella." He there states in bitter language that recent advances in surgery are not enough to make the medical attendants of the Prince undertake the responsibility of applying them in this case to a patient of such high degree whose successful treatment puts their reputation at stake. He is perfectly astonished that at the consultation in which Lord Lister himself took part the idea of operative interference was unanimously rejected, especially as the distance between the fragments was more than two inches. It is amazing that in the country of Lister, to whom is due the first idea of treating this form of fracture by direct suture, the Sovereign (*sic*) should not enjoy in the same degree as the least of his subjects the benefit of this admirable treatment—unless, indeed, there was something in the general health of the patient to contra-indicate any surgical operation whatever, and such contra-indication has never been hinted at. Dr. Championnière would without doubt have freely opened the joint and brought the bony fragments together by two stout sutures. He has himself treated 53 cases of fractured patella in this way, who have all recovered perfect use of their joints and are able to do the hardest work. Among these was an acrobat who two months after the operation used to perform in a circus *le saut périlleux*. Even elderly persons rapidly recovered after the operation. On the other hand, he has always seen immobilisation leave stiffness in the limb for the remainder of life as well as muscular atrophy and diminished physical activity, leading at a certain time of life to all those cardio-pulmonary and gastric complications which come from want of exercise. The article finishes in the following words: "These are the reasons why I consider, until more ample information is forthcoming, that one must regret that we have not seen this operation performed upon a prince who possesses the respectful sympathy of all Frenchmen, and whose proverbial activity is so desirable for all, and not merely in his own interests but those of humanity."

Sept. 27th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

The Coloured Race in Life Assurance.

THE Atlanta University has investigated the comparative mortality-rates of the negro race. In respect to phthisis and pneumonia the coloured population had a death-rate of 75·5, as compared with that of the white population, 32·8. In fevers, as typhoid, scarlet, malarial, &c., the excess was 30 per cent. on the same side; in cholera infantum, convulsions, &c., it was 165·1. As to phthisis the percentage of the excess of deaths per 10,000 in the case of blacks over the deaths of whites, covering periods of four years each, from 1881 to 1895, was from 143 to 172 in Atlanta, from 90 to 137 in Memphis, from 162 to 239 in Charleston, from 128 to 149 in Baltimore, and from 87 to 114 in Richmond. The Prudential Company has had experience in both equal and discriminated insurance for blacks and whites. For a term of years it has been in the habit of giving one-third less insurance for the same money to coloured than to white adults, from 12 to 70 years. During the period in question the mortality was separated and tabulated by colour and special study and search among health reports and census reports was made. From 1884 to 1893 inclusive the company's experience showed an average loss per $1000 at a risk of $16·96 among whites and $21·63 among blacks. The causes were found to be mainly: comparatively higher actual mortality resulting from lack of physical vigour, inherited tendencies to disease, neglect in sickness, improper food, unwholesome habits of life and unhealthy localities; a heavy lapse rate, in which the "selection" was against the company as usual; a low moral sense; and ignorance of its attendant evils, although the last-named cause might seem to be included in the others. Even among the small number of negroes who are thrifty, intelligent, and on a high comparative level of moral and social living, the Prudential Company is satisfied that mortality still exceeds that among whites, owing to low vitality and inherited weakness of constitution. The Sun Life Company has reported a similar experience and belief, adding that southern whites object to joining any company which accepts negro risks freely, not from race prejudice, but because they do not believe insurance of the two races on equal terms to be equitable.

The New York State Pathological Laboratory.

During the spring of 1898 the Legislature of the State of New York appropriated a sum of money to the purpose of equipping and maintaining a laboratory to be devoted to the study of the causes, mortality-rate, and treatment of cancer. This laboratory is now being conducted under the supervision of the medical department of the University of Buffalo. The laboratory is equipped with every possible facility for investigating the disease, both in its clinical and pathological aspects. The officers of the institution invite correspondence with physicians throughout the country in regard to statistics and all matters connected with this study; they also desire to secure reprints of all monographs pertaining to this subject for its library. They furthermore particularly wish to learn the names and addresses of the various quacks, charlatans, and institutions advertising as curing this disease, as well as the methods in use amongst them. Such correspondence will be regarded as absolutely confidential if so requested. It is desired also to secure specimens of tumours from all varieties of the lower animals, either gross specimens or fragments for microscopical examination. These should be sent securely packed, the former immersed in weak alcohol or formaline solution, the latter in pure alcohol. They will be gratefully acknowledged or even paid for in exceptional cases.

Medical Department of Cornell University.

Through the munificent gift of $1,500,000 arrangements have been perfected by which Cornell University is to establish a medical department in the City of New York. The donor is Colonel Oliver H. Payne, formerly a member of the board of trustees of the New York University. The condition which has made the establishment of this new college possible arose from the controversy which raged a year ago in the Council of the University of the City of New York over the treatment of its medical department, which led to the withdrawal not only of almost the entire medical staff but also of nearly half of the active members of the council, of whom Colonel Payne was one. The faculty of the new college includes the entire governing faculty and most of the instructors and professors of special branches lately connected with the University of the City of New York and also several of those associated with the Bellevue Hospital Medical College. The full four years' course of the Cornell University Medical College is given in the City of New York and the course of the first two years is also given in Ithaca, where the University is located. As co-education of the sexes is allowed in Cornell University, the following provision has been made. Men students may take half the course in Ithaca and the other half in New York; women students must take the first half of the course in Ithaca (where a home is provided in the Sage College for Women) and the latter half in New York. The proposed Cornell Medical College will be situated on the block bounded by Twenty-seventh- and Twenty-eighth-streets and First-avenue. It will be an imposing building 200 ft. by 100 ft., five stories high and some 85 ft. to the cornice. The interior of the building will be simple and severe in character, but the materials used will be those specially fitted to the purposes of a medical college, glazed brick and tile predominating in the finish of the different rooms. The ground floor will be partly occupied by the dispensary, which forms a complete and separate department, with general waiting-rooms for males and females, small theatres for operation and separate rooms for the eye, ear, nose, and throat departments, for the apothecary, &c. The second floor contains the rooms for the skin, gynæcological, and orthopædic departments, and orthopædic workshop, and two section demonstration theatres. The third floor will contain physiology students' and private laboratories, chemistry students' and private laboratories, recitation rooms, amphitheatres, and private rooms for professors. The fourth floor will contain the workshop, museum, dark room for preparing and mounting specimens, manikin room, materia medica laboratory, bacteriology laboratory, room for operative surgery, lavatories, &c. The fifth floor will contain the dissecting rooms for male and female students.

Sept. 19th.

BRISTOL ROYAL INFIRMARY.—An anonymous donor has promised £1000 if twelve others will give a similar amount towards the liquidation of the debt of £13,000 owing by the Bristol Royal Infirmary.

THE INDIAN MEDICAL ASSOCIATION AND REFORM IN MEDICAL EDUCATION.

IN May, 1898, the Council of the Indian Medical Association decided upon sending to the Government of India a memorandum as to reform in medical education. The points which the Council wished chiefly to lay stress upon were as follows:—

1. A unified standard of preliminary examination in general education for admission to medical study for all universities in India. As the F.A. of Calcutta and the Intermediate of Lahore are already accepted by two universities the other academical bodies should be asked to raise their preliminary education standard to this level.
2. That the medical degrees granted by Indian Universities be of one standard and one nomenclature—namely:
   (*a*) Licentiate of Medicine and Surgery or L.M.S.
   (*b*) Bachelor of Medicine or M.B.
   (*c*) Master of Surgery or C.M.
   (*d*) Doctor of Medicine or M.D.
   No imitations of these degrees should be permitted.
3. A unified standard of preliminary examination (the Entrance or Matriculation of Indian Universities or the High School Certificate) a full curriculum (5 years), and a unified diploma (Diplomate in Medicine, Surgery, and Midwifery, or D.M.S.M.) for all Military Assistant Surgeons.
4. A unified standard of preliminary examination (the Middle School Examination of the Government European Code of its equivalent entrance), a curriculum of four years' medical study, and a unified professional examination and certificate of qualification for all hospital assistants, whether civil or military, and for all junior medical schools, whether State or private. Certificate in Medicine, Surgery, and Midwifery (C.M.S.M.).
5. The formation of a General Medical Council for India (with powers similar to the General Medical Council of Great Britain) composed of an equal proportion of Government officials and independent medical practitioners.

The memorandum, which was drawn up by the secretary of the association, Dr. James R. Wallace, also remarked upon the fact that in India almost everything was in the hands of the Government and that therefore it was the duty of the Government to see that medical education was kept at a high level, whereas it was willing "to accept anything in the shape of a 'diploma' as good enough for its own local services and for the medical requirements of the public." It also deals with the licences in Medicine and Surgery granted under the auspices of the Dufferin Fund and says that the question must be raised as to the legality of these licences.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON. — In September the following candidates passed in the subjects indicated:—

Surgery.—G. H. Bedford (Section I.) and F. P. Bush, Guy's Hospital; H. H. Cotman (Section I.), Aberdeen and London Hospital; H. L. Heath (Section II.), Toronto and Cambridge; J. W. King (Sections I. and II.), Charing Cross Hospital; E. C. Scarlett (Section I.), Royal Free Hospital; and A. E. Shaw, Cambridge and St. Thomas's Hospital.

Medicine.—C. G. Catterall (Section I.), Leeds and Westminster Hospital; H. Cooper, Aberdeen; H. H. Cotman (Section I.), Aberdeen and London Hospital; H. L. Heath (Section II.), Toronto and Cambridge; and W. M. Hocken, Liverpool.

Forensic Medicine.—C. G. Catterall, Leeds and Westminster Hospital; and W. M. Hocken, Liverpool.

Midwifery.—C. G. Catterall, Leeds and Westminster Hospital; H. H. Cotman, Aberdeen and London Hospital; E. L. D. Dewdney, King's College Hospital; L. Liebster, Vienna; and A. H. Safford, King's College Hospital.

The Diploma of the Society was granted to the following candidates, entitling them to practise Medicine, Surgery, and Midwifery:—H. L. Heath and J. W. King.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the third examination for the degree of Bachelor in Medicine, held at the College of Medicine, Newcastle-upon-Tyne, in September, the following candidates satisfied the examiners:—

Second-class Honours.—James Robert Burn, Frederic William Lambelle, Richard Henry Dix, Thomas Smirk Percival Parkinson, and Robert Peart, College of Medicine, Newcastle-upon-Tyne.

Pass List.—Reginald Alderson, College of Medicine, Newcastle-upon-Tyne; Clifford Harold Brookes, St. George's Hospital; Henry Eggleston and Joseph James French, College of Medicine, Newcastle-upon-Tyne; Duncan Matheson Johnston, St. Bartholomew's Hospital; Fred Stuart, College of Medicine, Newcastle-upon-Tyne; Eleanor Shepheard, London School of Medicine for Women; William Johnston Symes, Sheffield School of Medicine; Leonard Satchwell Smith, Mason College, Birmingham; and Ralph Harry Vincent and Edgar Sheldon Wilkinson, St. Bartholomew's Hospital.

THE REGISTRATION OF PLUMBERS AND DOMESTIC SANITATION.—The Lord Mayor of Manchester presided at a public meeting in Manchester on Sept. 19th, at which Dr. Mansel-Howe delivered an address on "The Registration of Plumbers and Domestic Sanitation." We must, he said, feel sure that it was upon the efficiency of a system ensuring the qualification of plumbers and enabling the public to recognise the qualified man that sanitary plumbing actually depended. The registration of the plumber deserved to come under the recognition and the protection of Parliament. Mr. Lees Knowles, M.P., said that all parties in the House of Commons were committed to the principle of the Bill, the main object of which was to afford additional safeguards to the public health by enabling persons employing plumbers to select, when they desired to do so, those who had given evidence of their qualification for plumbers' work.

PRESENTATIONS TO MEDICAL MEN.—At a well-attended public meeting of subscribers held on Sept. 16th in the Council Chamber, Banff, Mr. George Wilson, M.B., C.M. Aberd., of that town, was presented with a gold watch and chain and a purse of sovereigns on his leaving the district. The inscription on the watch is as follows: "Presented to Dr. George Wilson, along with gold albert and purse of sovereigns, on the occasion of his leaving Banff, by friends and well-wishers in Banff and district. Sept. 16th, 1898." On the front of the watch there is engraved the monogram of the recipient. It may also be mentioned that Dr. Wilson was subsequently the recipient of a valuable study chair, bearing an appropriate inscription, from the superintendent and officials of the Ladybridge Asylum.—Mr. Reginald Wade, M.R.C.S. Eng., L.S.A., of Highbridge, Somerset, has been presented with an ink-stand, suitably engraved, by the members of the class of the St. John Ambulance Association consisting of employés of the Great Western Railway Company in appreciation of his services as honorary lecturer.—On Sept. 21st the children of the Chulmleigh (North Devon) Board Schools presented the chairman, Mr. Joseph Tucker, M.R.C.S. Eng., L.S.A., with a silver water-jug as a mark of respect and esteem on the occasion of his marriage. The Chulmleigh Cricket Club presented him with a toilet set and the children of Week School with a biscuit box. Lieutenant Gibson, on behalf of the G Company of Devon Volunteers, gave an address and a case of silver dessert knives and forks. Mr. Tucker was largely instrumental in establishing at Chulmleigh the G Company Volunteers of which he is the Lieutenant in command.

DIPHTHERIA IN LONDON.—Diphtheria in London has been a diminishing quantity during many weeks past, as shown by successive four-weekly periods, both as regards amount of disease and recorded numbers of fatal cases. In the four weeks ended on July 16th there were notified 849 attacks in London, all the several sanitary districts having been invaded, five of them having an aggregate of 290 cases, while five other areas had only 9 cases in all. The weekly average of attacks was 212, that of registered deaths was 29, the total being 116. The resulting case mortality was 13·7 per cent. In the four weeks next succeeding the total number of notified cases fell to 785, giving a weekly average of 196, and two sanitary districts escaped invasion. Only one district had more than 50 attacks notified, while in five other areas only 12 cases were heard of. The registered deaths fell to 96, a weekly average of 24, and the case mortality also fell to 12·2 per cent. The next similar period, ended on Sept. 10th, revealed a still further decline of attacks, the total having been 699, a weekly average of 175 being the result. All the sanitary districts were invaded, but not one had as many as 50 cases, whilst five areas had only single attacks recorded. The registered deaths, however, increased to 107, or 27 weekly, and the case mortality became 15·3 per cent. In the Outer Circle the course of fatal diphtheria has been erratic, the figures for the several weeks of the three periods dealt with having been 11, 11, 10, and 9 in the July period, or 41 in all; 11, 11, 15, 8, and 13, or 47 in all, in the August period, and 13, 9, 7, and 10, or 39 in all, in the period ended on Sept. 10th. In each of the two complete weeks which have since elapsed the registered deaths from diphtheria in London have been identical in number—namely, 29. But while the corrected decennial average was exceeded by 13 in the earlier of those weeks that average was exceeded by as many as 18 last week. In the Outer Circle there were 11 recorded deaths in the earlier week and 12 last week. Of the 23 deaths thus registered 14 belonged to the West Ham district.

ICE-CREAMS.—On Sept. 19th a man was fined 30*s.* for manufacturing ice-cream amidst dirty surroundings at Port Talbot, South Wales.

TYPHOID FEVER AT HONICKNOWLE.—At the meeting of the Plympton Rural District Council, held on Sept. 23rd, Mr. Noy Scott, the medical officer of health, reported that typhoid fever had broken out in the hamlet of Honicknowle, in the parish of St. Budeaux. There are at present 23 cases of the disease in the village, which has 506 inhabitants and 106 houses. He attributed the outbreak to the insanitary and offensive condition of the main sewer, the pollution of the stream, and minor insanitary matters in the houses.

ABERDEEN CORPORATION LODGING-HOUSE.—This establishment, which will assist materially in the solution of the problem of house accommodation for the poorer classes, is almost finished. It will be opened probably in November next. The charges per cubicle have been fixed at rates varying from 6*d.* to 4*d.* per night and the manager to be appointed will have a salary of £80 per annum, with residence, fire, and light. There will also be an assistant manager, a cook, a laundrymaid, and six other servants for cleaning the dormitories, &c.

LITERARY INTELLIGENCE.—Messrs. J. & A. Churchill's announcements for October include the following new books and new editions:—A Manual of Ophthalmic Surgery and Medicine, by Mr. Walter H. H. Jessop, ophthalmic surgeon to St. Bartholomew's Hospital. The work contains over 100 illustrations, 5 coloured plates, and test types. A second revised and enlarged edition of Morris's Anatomy, with 800 illustrations, of which 200 are new or altered. The fifth edition of Taylor's Practice of Medicine, revised throughout with improvements in size and type. The fifth edition of Clouston's Clinical Lectures on Mental Diseases. A new work on Diet and Food considered in relation to Strength and Power of Endurance, Training and Athletics, by Dr. Alexander Haig, physician to the Metropolitan Hospital. A Synopsis of Surgery, by Mr. R. F. Tobin, surgeon to St. Vincent's Hospital, Dublin. A Textbook of Histology, including the Microscopic Technic, by Dr. Philipp Stöhr, Professor of Anatomy at the University of Würzburg, and edited by Dr. Alfred Schaper, demonstrator of histology at the Harvard Medical School. The sixth edition of Goodhart's Diseases of Children. Vol. iv., and reprints of vols. i., ii., and iii., part 1, of Allen's Commercial Organic Analysis. Vitality: an Appeal, an Apology, and a Challenge, by Dr. Lionel Beale, Emeritus Professor of Medicine in King's College.—We notice in connexion with Mr. John Poland's forthcoming work upon "Traumatic Separation of the Epiphyses" that Messrs. Smith, Elder and Co. are about to publish a Skiagraphic Atlas by the same author. It illustrates the development of the bones of the wrist and hand as displayed by the Roentgen rays. This is the first instance in which a series of skiagrams showing the ossification of the bones of these parts has been traced over a period of years from early infancy. Such an atlas may well be of great practical use to the surgeon and student.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

ALFORD, H. J. MARMADUKE, L.R.C.P. Lond., M.R.C.S., has been appointed Resident Dispensary Medical Officer to the Weston-super-Mare Hospital.

BAILEY, MATTHIAS, M.R.C.S., L.R.C.P., has been appointed Senior House Surgeon to the Bootle Borough Hospital.

BOULTON, A., L.R.C.P. Lond., M.R.C.S. Eng., D.P.H., has been re-appointed Medical Officer of Health by the Horncastle Rural District Council.

BUIST, R. C., M.D., C.M. Edin., has been appointed a Medical Officer in the department of Gynæcology for the new Hospital for Women in connection with the Dundee Royal Infirmary.

CRIBB, C. H., has been appointed Analyst for the parish of Fulham, vice E. G. Clayton, resigned.

CROSSLEY, H. J., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Junior Resident Medical Officer for the Crumpsall Workhouse Infirmary, Manchester.

DOMMISSE, F., M.B., Ch.B., has been appointed Clinical Assistant for the Chelsea Hospital for Women, Fulham-road, London, S.W.

DOWN, ARTHUR REED, L.R.C.P. Lond., L.S.A., has been appointed Medical Officer for Bampton by the Tavistock Board of Guardians.

GRANT, J. E. R., L.R.C.P. Irel., M.R.C.S., Eng., has been appointed Chief Medical Officer for the South-Eastern and London, Chatham and Dover Railways.

HEADLEY-HARDING, C., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health for the Whittlesea Urban District.

JONES, T. C., L.R.C.P., L.R.C.S. Edin., has been appointed Medical Officer of Health by the Ruthin Rural District Council, vice J. M. Hughes, resigned.

KYNOCH, J. A. C., M.B., C.M., F.R.C.P. Edin., has been appointed a Medical Officer in the department of Obstetrics for the new Hospital for Women in connection with the Dundee Royal Infirmary, and also appointed to the chair of Midwifery at St. Andrews University.

PALMER, J. M., M.R.C.P., F.R.C.S. Irel., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, for the County of Armagh.

PATON, B. LEWIS, B.A., M.B., C.M., has been appointed Clinical Assistant for the Chelsea Hospital for Women, Fulham-road, London, S.W.

PERROTT, C. J., L.R.C.P., L.R.C.S. Irel., has been appointed Medical Officer for the Sanitary District of Kingswood, Oldland, and Hanham Abbots of the Warmley Union, vice R. W. Brimacombe, retired.

RANDLE, JAMES MAYNE, L.R.C.P. Lond., M.R.C.S. Eng., has been re-appointed Medical Officer of Health by the Ivybridge (Devon), District Council.

REID, STUART B., M.A. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon for the East London Hospital for Children and Dispensary for Women, Shadwell, E., vice Mr. William Evans, resigned.

SMITH, R. E., L.R.C.P., L.R.C.S. Irel., has been appointed Medical Officer for the Finchingfield Sanitary District of the Braintree Union.

TURNER, PERCY E., M.B., B.S. Durh., M.R.C.S., L.R.C.P., has been appointed House Surgeon to the Kent County Ophthalmic Hospital, Maidstone.

Vacancies.

For further Information regarding each vacancy reference should be made to the advertisement (see Index).

AYR COUNTY HOSPITAL.—House Surgeon for one year. Salary £50 per annum, with residence, board, and washing.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, Birmingham.—House Surgeon for six months. Honorarium £21, and board, lodging, and washing provided.

BOOTLE BOROUGH HOSPITAL.—Assistant House Surgeon. Salary £40 per annum, with board, washing, lodging, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board, residence, and attendance.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's-inn-road, W.C.—House Surgeon. Board and residence provided in the Hospital.

DISTRICT OF SOUTH HORNSEY.—Medical Superintendent for the Infectious Diseases Hospital at St. Ann's-road, N. Applications to the Clerk to the Council, Offices, Milton-road, South Hornsey, N.

DOVER HOSPITAL.—House Surgeon, unmarried. Salary commencing at £100 a year, with board and lodging.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for the Casualty Department for six months. Salary at the rate of £100 per annum.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, Bloomsbury, London.—Resident Medical Superintendent for one year. Salary £105 a year, with board and residence in the hospital.

JOINT COUNTIES ASYLUM, Carmarthen.—Second Assistant Medical Officer. Salary £120 per annum, advancing £10 annually to £140, with board, residence, and washing. £5 per annum in lieu of stimulants.

KENT COUNTY ASYLUM, Chartham, near Canterbury.—Third Assistant Medical Officer, single. Commencing salary £120, with board, washing, and furnished rooms.

LEEDS UNION.—Assistant Medical Officer for the Workhouse Schools and Infirmary, Beckett-street, Leeds. Single. Salary £100 per annum, with board, washing, apartments, and attendance, subject to statutory deductions. Applications to the Clerk, Poor-law Offices, East Parade, Leeds.

LEWISHAM UNION.—Second Assistant Medical Officer for the Infirmary, for six months. Salary £30 with usual resident allowances. Applications to the Medical Superintendent of the Infirmary, 282, High-street, Lewisham, S.E.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 for the first year, and £110 for the second year, with board and residence.

NORTH RIDING INFIRMARY, Middlesbrough-on-Tees.—House Surgeon, without a family. Salary £100 a year, with lodging, board, and washing, and £5 a year instead of beer.

OLDHAM INFIRMARY.—Junior House Surgeon. Salary £70 per annum, with board and residence.

PORTSMOUTH DOCKYARD AND STEAM RESERVE (EQUITABLE) MEDICAL SOCIETY.—Surgeon. Applications to the Secretary, 47, Liverpool-road, Kingston, Portsmouth.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, London.—Assistant Resident Medical Officer for four months. Salary at the rate of £50 per annum, with board, residence, and washing.

ROYAL HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Bridge-road, London.—Resident Medical Officer for twelve months. Salary £70, with board, lodging, and washing.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, London.—House Physician for six months. Salary at the rate of £40 per annum, with board, lodging, and washing.

ROYAL SOUTH HANTS INFIRMARY, Southampton. — House Surgeon. Salary £100 per annum, with rooms, board, and washing.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.—Assistant House Surgeon for six months. Salary at the rate of £50 per annum, with board and residence.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon for one year. Salary £50 per annum, with board, apartments, washing, and attendance.

TEIGNMOUTH HOSPITAL, South Devon.—House Surgeon, to act also as Secretary. Salary £60, with board, lodging, and washing.

UNIVERSITY COLLEGE, Liverpool (Victoria University).—The Chair of Midwifery and Gynæcology.

UNIVERSITY COLLEGE, London.—The Sharpey Physiological Scholarship. Applications to the Secretary.

WEST KENT GENERAL HOSPITAL, Maidstone.—Assistant House Surgeon, for six months. Honorarium £12 10*s.*, with board and residence.

Erratum.—In our last week's issue the vacancy at the Addenbrooke's Hospital, Cambridge, should read Resident House Physician and not Resident House Surgeon.

Births, Marriages, and Deaths.

BIRTHS.

ADAMS.—On Sept. 20th, at Aldersgate-street, E.C., the wife of John Adams, F.R.C.S., of a daughter.

DINGLEY.—On Sept. 24th, at Upper Woburn-place, W.C., the wife of Allen Dingley, F.R.C.S., of a daughter.

EVELYN.—On Sept. 26, at 24, Micklegate, York, the wife of W. A. Evelyn, M.D., of a daughter.

LANGDON-DOWN.—On Sept. 21st, at Carina, Teddington, the wife of Reginald L. Langdon-Down, M.B., M.R.C.P., of a daughter.

MELLERSH.—On Sept. 22nd, at Fairholme, Esher, the wife of W. Francis Mellersh, L.D.S. R.C.S. Eng., of Surbiton-hill, of a son.

MARRIAGES.

BLABER—DAWSON.—On Sept. 22nd, at St. Patrick's Church, Hove, by the Rev. Daniel-Tyssen, M.A., Vicar, assisted by the Rev. T. R. Hall, M.A., Curate, Percy Leonard Blaber, M.R.C.S. Eng., L.R.C.P. Lond., of "Sunnybank," Shoot-up Hill, West Hampstead, third son of William Blaber, of 34, Cromwell-road, Hove, and Lindfield, Sussex, to Agnes Frances, second daughter of Richard Dawson, M.B. Lond., of 15, Brunswick-square, Hove.

CHALMERS—CANNINGTON.—On Sept. 21st, at Wesley Chapel, Waterloo, Albert John Chalmers, M.D., F.R.C.S., younger son of the late Rev. James Chalmers, M.A., to Alice, second daughter of Edwin Cannington, J.P., of Beach Lawn, Waterloo, Lancashire.

GASKELL—HARVEY.—On Sept. 21st, at Deal, Leonard Sadgrove Gaskell, M.A. Cantab., M.R.C.S., L.R.C.P. Lond., younger son of Dr. Gaskell, J.P., St. Helens, to Edith Mary, only daughter of Troward Harvey, Esq., Deal.

HUNTLEY—ROPER.—On Sept. 29th, at the Church of the Ascension, Blackheath, by the Right Rev. the Lord Bishop of Southwark, assisted by the Rev. S. Bache Harris, Vicar of St. James', Kennington, and the Rev. Alfred L. Lambert, the Vicar, Edgar Huntley, M.B., B.S. Lond., fifth son of G. T. Huntley, Esq., of Tulse Hill, to Eleanor Alice Margaret (Daisy), eldest daughter of Dr. Roper, of Colby, Lewisham Hill, S.E.

JEFFREE—LIVERSIDGE.—On Sept. 21st, at St. Luke's, Caterham Valley, Frank Jeffree, M.B., of Clapton, to Ethel Maud, eldest daughter of William Liversidge, Flintfields, Whyteleafe.

ROANTREE—MACCABE.—On Sept. 19th, at the parish church, Sandyford, Joseph Roantree, M.D., of Newbridge, Co. Kildare, to Mary, eldest daughter of Sir Francis MacCabe.

WALLERS—HOLT.—On Sept. 21st, at the parish church, Blackburn, by the Right Rev. Bishop Cramer Roberts, D.D., assisted by the Rev. F. W. E. Chadwick, B.A., William Wallers, M.R.C.S., Blackburn, youngest son of the late Thomas Wallers of Manchester, to Lily, only daughter of Geo. H. Holt, A.M.Inst.C.E., Helmsley, Blackburn. At home Thursdays and Fridays, Oct. 20th, 21st, 27th and 28th.

WILLIS—NICHOLSON.—On Sept. 22nd, at Christ Church, Burbage, W. Morley Willis, F.R.C.S. Eng., of Park-street, Nottingham to Mary Eleanor, eldest daughter of Mr. J. W. Nicholson, of Burbage House, Buxton.

DEATHS.

HACON.—On Sept. 22, at Christchurch, New Zealand, Walter Edward Hacon, M.R.C.S., L.R.C.P., aged 47 years.

LEWIS.—On Sept. 5th, at West-terrace, Folkestone, Henry Lewis, M.D., aged 63.

N.B.—A fee of 5s. is charged for the insertion of Notice of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND, WHEN ACCOMPANIED BY BLOCKS, IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1898, which was completed with the issue of June 25th, and the Title-page to the Volume were given in THE LANCET of July 2nd.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1898, bound in cloth, gilt lettered, price 18*s.*, carriage extra; and Cases for binding the half-year's numbers, cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*, can be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

THE MUNYON CASE.

ON Sept. 23rd at the London County Sessions, James Edward Deane, forty-four years, described as a medical practitioner, surrendered to an indictment charging him with stealing three small sums of money—3*s.*, 3*s.*, and 4*s.*—belonging to his master, James Monroe Munyon, of "Munyon's Homœopathic Remedies," 121 and 123, Shaftesbury-avenue. It was alleged that the accused whilst employed as a "consulting physician" at the establishment named, sold "cures" taken from the stock efore they were stamped and in some cases failed to acco for the money. The London manager for Munyon said his employer engaged "Doctor" Deane. The accused was under him and commenced with a weekly wage of £4, increased subsequently first to £5 and then to £6. In cross-examination he stated that Munyon had an honorary degree from the University of Tennessee. He (witness) repudiated the suggestion that it was not possible to get a qualified man to occupy the position of manager. He could get half a dozen reputable doctors. For the defence it was submitted that Munyon instructed Deane to act as he thought best and to recoup himself out of the sales for any expense he was put to in his position. The jury returned a verdict of "Not guilty."

FUCUS VESICULOSUS.

To the Editors of THE LANCET.

SIRS,—Would any of your readers who have had experience in its use give me information about fucus vesiculosus—whether it does really reduce fat and what its general action is? Are there any indications to guide its use? Has it any wasting effects on normal glands? I should be obliged by any information before prescribing it for general obesity. I am, Sirs, your faithfully,

Sept. 27th, 1898. ENQUIRER.

A REVEALED CURE.

IN THE NAME OF ALLAH, THE MOST MERCIFUL AND THE MOST COMPASSIONATE.

A REVEALED CURE FOR THE BUBONIC PLAGUE.

UNDER the above stimulating heading a gentleman of Gurdaspur, Punjab, named Mirza Ghulam Ahmad, who places in brackets by the side of his name as an alternative title "The Promised Messiah," has published a little pamphlet explaining that Almighty God has been pleased to choose him as a medium through which to reveal "by direct inspiration" the specific remedy for the plague. The following are the words in which Mirza Ghulam Ahmad makes his revelation:—

> "The cure which I proclaim for the plague consists of two different medicines. One of them called the *Tiryaq-i-Ilahi* or the Divine treacle has been prepared solely by me, and it is to be taken as hereafter suggested. The other which is to be applied externally to the glands is an ointment called *Marham-i-Isa* or the ointment of Jesus. It would not be out of place to give a brief history of this wonderful ointment. It was originally made, about nineteen hundred years ago, after the crucifixion of Jesus Christ (peace be with him). It was prepared by the disciples of that prophet for applying it to the wounds on his hands and feet; and it turned out to be wonderfully efficacious in curing the said wounds within forty days. There is not the least doubt that Jesus did not die upon the cross. He had, however, received severe wounds which had rendered him so senseless when taken down, that he was generally believed to be dead. But it is a fact that the body was on account of the presence of the Sabbath taken down from the cross sooner than it was usual—so soon, indeed, that even Pilate marvelled if he (Jesus) were already dead, and moreover when one of the soldiers pierced his side with the spear, blood came out. These and such other circumstances go a long way to prove that Jesus came down alive from the cross. In short when this ointment, the *Marham-i-Isa*, had restored Jesus to complete health, he went out to preach the Gospel to those sects of the Jews that had scattered far and wide and had settled in other countries. It is for this reason that in Islamic Theological Literature Jesus is known under the name of *Masih*, a word which means one who travels much."

Then follows a lot of gibberish about the dosage of the "divine treacle," and at the end are placed half-a-dozen common-sense regulations as to domestic hygiene in the presence of infectious disease. The shrewdness which led Mirza Ghulam Ahmad to combine simple sanitary suggestions, bound to do good if followed, with the rhodomontade from which we have quoted leads us to suspect him of being a designing scamp and not merely a blasphemous idiot. We note that he is receiving subscriptions.

"INCARCERATION OF THE PENIS."

To the Editors of THE LANCET.

SIRS,—The account of the above in THE LANCET of July 23rd has its parallel in my own practice. A respectably dressed man, a widower, presented himself one morning evidently in great distress. His tale was that "the night before he had been larking and had passed his late wife's wedding ring over his penis." The ring, an unusually heavy one of the gipsy pattern, was seen tight up against the suspensory ligament of the urethra, the penis was swollen and œdematous, hanging below

like a big sausage, and the urine was dribbling away drop by drop. An attempt had been made with a file to remove the ring, but had evidently been soon abandoned as considerably more cuticle than gold had been removed by the process. I had in my tool chest a pair of sharp-cutting pincers such as are used for clipping through nails or wire. With these I cut through the massive ring and while one cut end impinged against the inner side of the blades which acted as a fulcrum I seized the other end with a strong pair of pliers, and opened out the ring which fell to the floor, much to the man's relief. As he did not turn up again I concluded that the penis soon resumed its normal appearance and functions.

I am, Sirs, yours faithfully,

Leicester, Sept. 26th, 1898. J. HEADLEY NEALE.

"THE MEDICAL DIRECTORY."

To the Editors of THE LANCET.

SIRS,—Your correspondent, "A Monmouthshire Subscriber of Thirty Years' Standing," thinks it a blemish that we include Monmouthshire in the Wales section. We agree with him that the position is anomalous, but the anomaly is due to the fact that we follow the example of Parliament, which has included the county of Monmouth in various statutes passed on behalf of the Principality. We may also refer as an example to the official title of the University College of South Wales *and Monmouthshire*.

We are, Sirs, yours faithfully,

J. & A. CHURCHILL.

Great Marlborough-street, W., Sept. 26th, 1898.

To the Editors of THE LANCET.

SIRS,—I am of opinion that an alphabetical list is after all the least troublesome. If you want to find the address of a man you have, with the present arrangement, to look through five or six different lists.

I am, Sirs, yours faithfully,

Cardiff, Sept. 26th, 1898. T. GARRETT HORDER.

DEVON COUNTY COUNCIL: MEDICAL EVIDENCE AT INQUESTS.

AT the meeting of the Devon County Council held on Sept. 22nd the Finance Committee reported that they had interviewed Mr. J. Tucker, M.R.C.S. Eng., L.S.A., of Chulmleigh, who had complained that the coroner for the Crediton district systematically omitted to call him to give evidence at inquests upon people whom he had attended. The committee had received a letter from the coroner explaining his conduct, and although they did not consider the Council had any jurisdiction in the matter, still the committee were of opinion that much stronger and more serious reasons than those given by the coroner were needed to justify his omission in the cases complained of to take the evidence of the medical attendant who was indicated by the Coroner's Act as generally the best and the proper witness to be summoned for the purpose. Sir John Phear, in moving the adoption of the report, said the explanation of the coroner was most remarkable, his excuse being that two years ago Mr. Tucker had passed a personal affront upon him which he visited upon the medical man by "boycotting" him and forbidding the deputy coroner to summon him, although the medical attendant was the proper person indicated by Act of Parliament to give evidence. After some discussion, during which Mr. Lambert, M.P., asked whether the County Council could not take some action in the matter, Lord Clinton, who presided, remarked that he thought sufficient had been said and the coroner would take this as a serious warning, adding that if the Council took any further action it would raise a very large question and after the strong remarks of the Finance Committee it would be well to let the matter remain where it stood. The report was then adopted.

"THE NATURE OF DRY-ROT."

To the Editors of THE LANCET.

SIRS,—Dry-rot is the cancer of buildings and can be successfully treated only by the treatment of cancer—total extirpation of the diseased structure. Dry-rot usually begins in wood, but it passes through brick with the greatest ease and less easily through porous stone. It cannot penetrate Portland cement. My house was badly affected some years ago and has been completely freed by the following measures: 1. Cut out and burn all affected woodwork, being careful to follow it into joists, lathing, wall-plates, plugs, &c. 2. Face all affected brickwork with Portland cement, carrying the cement a foot beyond the infected area. 3. As an additional precaution it is well to sluice the neighbouring woodwork for a couple of feet beyond the excised portion with saturated aqueous solution of corrosive sublimate. After this the fungus does not recur. After applying strong solution of chloride of zinc (Burnett's disinfecting fluid) the fungus does in time recur. To prevent recurrence it is well to attend to ventilation under floors and in other confined spaces.

I am, Sirs, yours faithfully,

Southend, Catford, S.E., Sept. 26th, 1898. CHARLES MERCIER.

M.D. Edin.—If the gentleman in question took the L.R.C.P. under the old regulations he possesses a registrable qualification. If, however, he took it under the new regulations—i.e., after the inception of the Conjoint Scheme—he is not fully qualified and therefore can only be employed as a pupil. Our correspondent had better apply to the General Medical Council.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 29th, 1898.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Sept. 23	30·24	E.	...	98	67	48	49	53	Fine
,, 24	30·15	E.	...	96	61	48	48	52	Hazy
,, 25	30·07	E.	...	89	62	50	50	56	Hazy
,, 26	30·05	E.	...	100	65	47	48	53	Hazy
,, 27	29·79	S.E.	...	92	65	46	48	51	Hazy
,, 28	29·93	N.W.	...	100	66	47	48	51	Fine
,, 29	29·96	S.	...	101	65	47	48	53	Hazy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M., Ophthalmic 1.15 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), St. Mark's (9.30 A.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), Westminster (2 P.M.), London Throat Hospital (2 P.M.).

TUESDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat Hospital (2 P.M. and 6 P.M.), Royal Ear Hospital (3 P.M.).

WEDNESDAY (5th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat Hospital (2 P.M.).

THURSDAY (6th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex, (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat Hospital (2 P.M.).

FRIDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat Hospital (2 P.M. and 6 P.M.).

SATURDAY (8th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Cancer (2 P.M.), London Throat Hospital (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (5th).—OBSTETRICAL SOCIETY OF LONDON.—8 P.M. Specimens will be shown. Papers:—Dr. J. Walters and Mr. A. R. Walters: Case of Puerperal Septicæmia treated by Antistreptococcic Serum.—Dr. Cullingworth: Early Ectopic Gestation (? tubo-uterine) complicated by Fibro-myomata of the Uterus.

FRIDAY (7th).—WEST LONDON MEDICO-CHIRURGICAL SOCIETY (West London Hospital, Hammersmith, W.).—Dr. S. D. Clippingdale: Some Considerations of the Life and Work of a General Practitioner (Presidential Opening Address).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

THURSDAY (6th).—LONDON TEMPERANCE HOSPITAL.—2 P.M. Dr. S. Fenwick: Clinical Demonstration to Senior Students.

During the week marked copies of the following newspapers have been received: *South Wales Daily News, Bramley Telegraph, Manchester Guardian, Leicester Post, Wolverhampton Chronicle, Worcester Echo, Devon Gazette, Cheltenham Examiner, Times of India, Pioneer Mail, Builder, Walsall Free Press, Sheffield Telegraph, Yarmouth Independent, Newcastle Chronicle, Dundee Advertiser, Yorkshire Post, Architect, Glasgow Herald, Berkhamsted Times, Midland Counties Express, Liverpool Daily Post, Derby Telegraph, Nottingham Express, Beverley Guardian, Brighton Gazette, Portsmouth Times, Essex Telegraph, Bristol Mercury, Hove Gazette, Cambridge Express, Bedford Mercury, Falkirk Herald, Scotsman, Western Mail, Birmingham Gazette, Leeds Mercury, East Anglian Daily Times, Blackpool Gazette, Newcastle Daily Leader, Sanitary Record, Local Government Chronicle, Reading Mercury, Mining Journal, Hertfordshire Mercury, City Press, St. Bartholomew's Hospital Journal, Oxford Times, Surrey Advertiser, Bolton Evening News, Local Government Journal, Weekly Free Press and Aberdeen Herald, Cork Examiner, Skibbereen Eagle, Warwick Times, Weekly Sun, Evesham Standard, Hull Times, Peterborough Standard, &c., &c.*

Communications, Letters, &c., have been received from—

A.—Mr. R. E. Abbott, Portsmouth; Addenbrooke's Hospital, Cambridge, Secretary of; Messrs. Allen and Hanburys, Lond.; Apothecaries' Society, Lond., Secretary of; A. S. M.; A., Wisbech.

B.—Dr. J. S. Boden, Lond.; Mr. M. Bailey, Bootle; B., Bradford; Mr. F. Bochin, Lond.; Mr. L. A. Bidwell, Lond.; Mr. E. Bower, Birmingham; Mr. J. W. Bird, R.N., Devonport; Messrs. Burgoyne, Burbidges, and Co., Lond.; T. B. Browne, Ltd., Lond.; Mr. A. E. Barker, Lond.; Mr. S. T. Beckett, Cullingworth; Birmingham and Midland Ear and Throat Hospital, Secretary of; Messrs. Burroughs, Wellcome, and Co., Lond.; Professor Jules Brissonnet, Tours; Mr. Lennox Browne, Lond.; Messrs. Baillière, Tindall, and Cox, Lond.; Dr. E. C. Baker, Brighton; Sir Walter Besant, Lond.; Rev. R. A. Bull, Southborough; Bristol Infirmary, Secretary of; Mr. F. Bauermeister, Glasgow; Bootle Borough Hospital, Secretary of.

C.—Sir J. Crichton-Browne, Lond.; Colonial Office, Secretary of; Cortland Wagon Co., Lond.; Messrs. J. A. Carveth and Co., Toronto; Cork-street Hospital, Dublin, Lady Superintendent of; Mr. W. T. Councilman, Boston, U.S.A.; Messrs. Cassell and Co., Lond.; Dr. H. F. Call, Rimanski; Messrs. J. and A. Churchill, Lond.; Dr. W. H. Cooke, Bath; Dr. A. H. Croucher, Eastbourne; Dr. J. M. Clarke, Clifton; Cuc, Manchester; Dr. Mactic Campbell, Liverpool; Mr. W. J. Clay, Edinburgh; Cantab, Lond.; Mr. T. Cooke, Lond.

D.—Mr. A. Duke, Cheltenham; Douglas Borough, Town Clerk of; *Derbyshire Free Press*, Editor of.

E.—Messrs. Elliott, Son, and Boyton, Lond.; Dr. J. O. Eyre, Lond.

F.—Mr. Francis E. Freemantle, Ripon; Messrs. Fieber Bros., Lond.; Fairbairn, Ltd., Edinburgh; Dr. B. Fox, Bristol; Messrs. Fletcher, Fletcher, and Co., Lond.

G.—Mr. H. J. Glaisher, Lond.; Mr. F. Garrett, Armscote Manor; G.M.W.; *Guardian*, Lond., Editor of; Surg.-Gen. A. A. Gore, Simla.

H.—Dr. F. L. Hart, Lond.; Mr. J. Hutchinson, Lond.; Mr. C. W. C. Hyslop, Church Stretton; Mr. C. H. Harris, King's Heath; H., Bristol; H. M. B.; Hirschfield Bros., Lond.; Hastings Bros., Lond.; Mr. B. Huntley, Lond.; Mr. M. Houghton, Lond.; Mr. R. Harrison, Lond.; Mr. J. J. Harding, Ballincollig; Mr. Charles Hutley, Askew; Huddersfield, Mayor of; Messrs. J. Haddon and Co., Lond.; Mr. J. Heywood, Manchester.

J.—Dr. A. H. Jeremy, Southampton; J. D.; Messrs. T. B. Jones and Co., Leeds; Dr. J. Johnston, Bolton.

L.—Dr. J. Fletcher Little, Lond.; Dr. J. Lowe, Lond.; Mr. R. Lake, Lond.; L. M., Woodford Green; Messrs. Lee and Martin, Birmingham; Mr. G. J. R. Leeson, Lond.; Dr. A. Love, Drumquin, Ireland; Dr. J. H. Lamb, Crewkerne; Leeds Union, Secretary of.

M.—Dr. F. J. McCann, Lond.; Mr. J. S. McKendrick, Stonehaven; Metropolitan Machinists' Co., Lond.; Dr. Mansel-Howe, Manchester; Mr. R. J. Marshall, Lond.

N.—Dr. J. H. Nicoll, Glasgow; Messrs. Nicolay and Co., Lond.; National Society for Aid to the Sick and Wounded in War, Lond., Secretary of; National Provident Institution, Lond., Secretary of; North Riding Infirmary, Middlesbrough, Secretary of; Mr. C. A. Notley, Catford; Nursing Institute and Medical Home, Secretary of.

O.—Oldham Infirmary, Secretary of; Dr. I. Owen, Lond.; Messrs. P. de Otarduy and Co., Lond.

P.—Mr. H. A. Pearson, Handsworth; Mr. G. Pernet, Lond.; Mr. T. F. Poche, Dinas Powis; Plumbers' Company, Lond.

R.—Mr. A. W. Mayo Robson, Leeds; Mr. W. E. Ryves, Sheffield; Dr. C. Reinhardt, Southstoke; Dr. J. H. Robinson, Oldham; Mr. A. R. J. Ross, Lond.

S.—Earl Spencer, Althorp; Mr. W. B. Saunders, Philadelphia; Mr. Rowland Smeeth, Belfast; Dr. Shiels, Birmingham; J. T. Segrue, Ltd., Lond.; Student, Lond.; South Devon and East Cornwall Hospital, Plymouth, House Steward of; Captain Stone, Cheltenham; Dr. Spencer, St. Briavels; Scottish Equitable Life Assurance Co., Newcastle-on-Tyne, Secretary of; Swansea Hospital, Secretary of; South Hornsey Urban District Council, Clerk of; Smith's Advertising Offices, Lond.; Messrs. Street and Co., Lond.; Messrs. Street Bros., Lond.; Messrs. Sykes, Josephine, and Co., Lond.; St. Andrew's Hospital, Northampton, Secretary of; Mr. S. Spokes, Lond.; Messrs. Smith, Elder, and Co., Lond.; Mr. A. Stenhouse, Glasgow.

T.—Dr. C. B. Taylor, Nottingham; Dr. R. S. Thomson, Glasgow; Mr. R. F. Thomas, Cwmaman; Thanet (Isle of), Clerk of; Taunton and Somerset Hospital, Accountant of; Dr. A. G. A. Thomson, Devizes; T. M.; Dr. F. Taylor, Lond.; Mr. G. R. Turner, Lond.

U.—Dr. J. F. Usher, Ballarat; University of Durham College of Medicine, Newcastle-on-Tyne, Secretary of.

V.—Mr. W. Van Praagh, Lond.; Mr. G. Van Abbott, Lond.; Victoria Carriage Works, Lond.

W.—Dr. J. R. Wallace, Calcutta; Dr. L. A. Weatherly, Bath; Wilts County Asylum, Devizes, Superintendent of; Messrs. J. Wright and Co., Bristol; Messrs. Wright, Dain, Peyton, and Co., Birmingham; Worthing Corporation, Town Clerk of; Mr. C. F. Wardley, Penzance; Mr. R. T. Williamson, Manchester; Messrs. Widenmann, Broicher, and Co., Lond.; Dr. H. Walsham, Lond.; Professor Windle, Birmingham; Mr. A. Waddell, Broughty Ferry; Dr. A. Warden, Paris.

Z.—Z., Eastbourne.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. R. R. Anderson, Fern Hill; A. B. J.; A. K.; A. A. B.; A. F.

B.—Dr. J. M. Barbour, Lond.; Dr. W. H. Burke, Rajput, India; Messrs. Benger and Co., Manchester; Barrett, Liverpool; Mr. H. Butterfield, Northampton; Messrs. Battle and Co., Paris; Mr. W. H. Blaber, Hove; *Bolton Chronicle*; B., Bradford; B., Lond.; Messrs. Brown, Gould, and Co., Lond.; Mr. J. N. Bredin, Potton; Dr. J. S. Bolton, Birmingham.

C.—Dr. J. Clegg, Urmston; Mr. R. H. Cowan, Wigan; Mr. E. M. Corner, Lond.; C. S. V.; Carnarvon Infirmary, Bangor, Secretary of; Messrs. E. Cook and Co., Lond.; C. R. G.; C. G. H.; C. S. J.; Mr. E. Chilcott, Woolston; C. J.; C. L.; C. B. M.; Messrs. Condy & Mitchell, Lond.

D.—Mr. R. Duncan, Banff; Dover Hospital, Secretary of; Mr. J. H. Dewan, Carrick-on-Suir; Doctor, Bedlington; Mr. H. Downes, Upton-on-Severn; Dr. J. Davis, Lond.; D. C.; Dr. H. E. Daniell, Bournemouth; Messrs. Douglas and Mason, Edinburgh.

E.—Dr. J. W. Edgar, Settle; E. F.; E. McC.

F.—F. F. M.

G.—Mr. J. B. Gabe, Morriston; Mr. J. Greet, Lond.; Mr. A. G. Garrett, Leamington; G., Bayswater; Dr. J. W. Geddes, Winterton; Mr. W. Gosse, Sittingbourne; G. W.; G. H. W. H.; Dr. Guy, Exmouth.

H.—Dr. J. Holmes, Whitefield; Mrs. Hitch, Hollington; H. C.; H. R.; Mr. C. H. Harding, Whittlesea; Miss Herrick, Ilkley.

J.—Joint Counties Asylum, Carmarthen, Secretary of; J. H. G.; J. F. H.; J. R. L.; J. H.; J. A.; J. C. P.; J. A. C. B.; J. J. K.; J. J. R.

K.—Mr. J. P. Kelly, Hoo; Mr. V. K. Kirlosker, Jamkandi, India; Dr. J. P. Kitson, Cleobury Mortimer.

L.—Mr. W. Lear, Wells; Dr. J. H. Lighthody, Wybunbury; Messrs. Ling and Tyrie, Keighley; Mr. B. W. Lamb, Albrighton; Dr. W. Livesay, Sudbury, Derby; Mrs. Lappin, Gilford, co. Down; Locum, Cardiff.

M.—Dr. McCleary, Ellesmere; Mr. R. D. Morgan, Ynysybwl; Mr. A. M. Mackintosh, Kilsyth; Dr. M.; M. O. B.; Medico, Devonport; M., Manchester; Medicus, Blackburn; Medicus, Greenwich; Mr. J. Milne, Lond.; M. C.

N.—Nottingham General Hospital, Secretary of; Mr. W. E. Newey, Dudley.

O.—Mr. B. O'Connor, Burnley; Mr. F. Owen-Cox, Cleobury Mortimer; Dr. L. O'Cleary, Clonakilty.

P.—Dr. W. H. Price, Hebburn-on-Tyne; Mr. J. W. Pratt, Wivelscombe; Dr. W. H. Packer, Cressage; Mr. A. E. H. Pinch, Lee, Devon; Mr. E. A. B. Poole, Kidderminster.

R.—Mr. J. Reader, Wakefield; R. L. R.; Dr. H. Rowlands, Towyn; Dr. D. T. Richards, Risca; R. C. W.

S.—Dr. Spence, Burntwood; Mr. G. Strong, Wokingham; Salop, &c., Lunatic Asylum, Secretary of; Mr. W. Stratton, Loughrea; S. R.; Messrs. W. H. Smith and Son, Manchester; S. S. G.; Lond.; Mr. E. Swindells, Torcross; Surgeon, Lond.; Sister, Harlesden; Mr. G. Sandall, Lingfield; Mr. R. Sneeth, Clongowes Wood, Ireland; Mr. J. Spencer, Cradley.

T.—Teignmouth Hospital, Secretary of; T. B.; Mr. J. Thin, Edinburgh.

V.—Vulcan, Bradford.

W.—Mr. A. P. Walters, Tilt Cove, Newfoundland; Wills, Ltd., Lond.; Mr. J. H. Webster, Cheltenham; W. M. S.; W., Barnstaple; Dr. J. B. Wilkinson, Oldham; Mr. C. E. O. Walker, Dewsbury; Mr. D. O. Williams, Glandovey; Mr. T. F. Wyse, Beckley; West Riding County Council, Accountant of; Mr. H. Wilson, Sheffield; W. F. E.; Mr. W. Winterbotham, Lond.; Mr. W. Wood, Great Ayton; W., Willesden Green.

Z.—Messrs. A. and M. Zimmermann, Lond.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements	Ditto	0 4 6
	Every additional Line	0 0 6

Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.
Terms for Position Pages and Serial Insertions on application.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice, but is in itself an *additional* advertisement.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to Advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 8, Rue Traversière, Asnières, Paris.